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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
G. A. Albano and H. Beasley, Assistant Editors

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July 1965 Washington, D. C. Vol. 27, No. 7

THE U. S. COD FISHERY IN THE NORTHWEST ATLANTIC

By Albert C. Jensen* and Harriett E. Murray**

ABSTRACT

The U. S. cod fishery in the Northwest Atlantic has changed greatly during the past 300 years. Originally an inshore fishery with hand lines fished from small boats, it soon moved offshore to the distant banks including the Grand Bank off Newfoundland. Toward the end of the 19th Century, an average of 94 million pounds of cod were landed annually. Most of the catch was salted and dried.

The offshore operations were made more efficient with changes in gear and vessels. The changes also made possible the exploitation of new fishing grounds in inshore waters as well as offshore.

Improvements in handling the catch at sea and ashore and in processing it for market eliminated the salt-cod fishery. The same improvements--filleting and freezing--made other species more popular with consumers and decreased the demand for cod. In recent years, annual U. S. cod landings have been about 35 to 40 million pounds.

Historical and modern details and statistics of the U. S. cod fishery are described. The methods, equipment, and landings are detailed for the New England, Middle Atlantic, and Chesapeake Bay states.

INTRODUCTION

The history of the U. S. fishery for cod (Gadus morhua--fig. 1) is intimately associated with the history of our Nation. From earliest times, cod fishing was important as a source of food and later as a source of the dried-salted product that figured in world trade.

The magnitude of the fishery fluctuated greatly over the centuries but generally it has declined, especially during the past 50 years, as other species became more important to the industry. Cod, however, is still sought by U. S. fishermen and maintains a relatively modest but secure position in the annual landings of food fish. In recent times, when haddock abundance has been low, fishermen landed more cod to supply the market demand for fish.

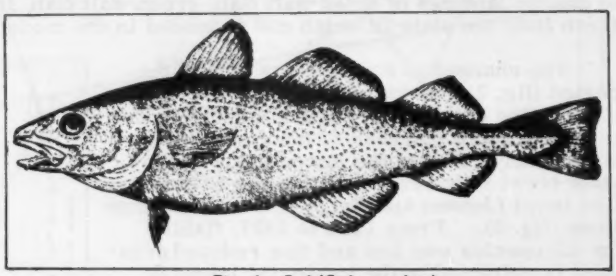

Fig. 1 - Cod (Gadus morhua).

HISTORY OF THE FISHERY

Exploitation of the Northwest Atlantic cod resource began in the 16th Century when French and Portuguese vessels fished the Grand Bank off Newfoundland (Taylor 1957). By the early 17th Century, the New England colonists were fishing for cod in the local waters. In 1624, "no less than fifty ships" from Gloucester fished with hand lines in the offing of Maine and Massa-

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chusetts (Babson 1860). By 1708, New England vessels fished the Nova Scotian banks (Innis 1954) and in 1748 the first cod trip from Georges Bank was landed (Goode 1887).

The vessels, however, began to go farther and farther offshore to fish. In 1757, Gloucester vessels ventured to the Grand Bank. Evidently the fishing there was more productive than on the local banks because by 1788 as many as 60 Gloucester vessels were fishing on Grand Bank (Babson 1860).

Without doubt, cod abundance was low in the local waters. It does not seem reasonable that the fishermen would risk a long trip offshore in their tiny vessels if there had been plenty of cod nearby. Some attributed the scarcity of fish to power dams built for textile mills (Baird 1874). The dams, it was said, prevented the runs of alewives (Alosa pseudoharengus) on which the cod fed. When alewife abundance declined, cod abundance also declined. Other factors no doubt contributed to the fluctuations in abundance.

Table 1 - Annual Landings of Cod from New England Waters, 1893-1962

Year	Landings	Year	Landings	Year	Landings
	1,000 Lbs.		1,000 Lbs.		1,000 Lbs.
1962	32,713	1939	50,602	1916	35,399
1961	32,442	1938	59,575	1915	34,782
1960	26,117	1937	72,937	1914	61,840
1959	30,557	1936	56,550	1913	45,414
1958	29,857	1935	56,640	1912	52,687
1957	24,177	1934	50,682	1911	49,797
1956	24,320	1933	59,101	1910	65,567
1955	22,885	1932	56,897	1909	74,755
1954	22,481	1931	61,226	1908	76,121
1953	20,624	1930	75,924	1907	106,494
1952	25,555	1929	67,991	1906	116,250
1951	35,639	1928	63,808	1905	68,430
1950	37,559	1927	72,240	1904	57,276
1949	45,389	1926	75,565	1903	73,872
1948	46,102	1925	64,669	1902	79,060
1947	43,157	1924	61,501	1901	85,243
1946	55,323	1923	57,468	1900	64,064
1945	52,863	1922	58,125	1899	90,993
1944	51,695	1921	60,381	1898	83,193
1943	49,105	1920	51,257	1897	86,543
1942	45,935	1919	56,441	1896	90,449
1941	57,993	1918	56,151	1895	117,005
1940	44,543	1917	40,103	1894	105,363
				1893	89,363

Note: Drawn or gutted fresh weight.

The success of the cod fisheries varied greatly over the years. Whereas 60 Gloucester vessels fished offshore in 1788, only 8 vessels were fishing offshore 12 years later. By 1819, the fisheries were so depressed that Congress passed a "bounty act" (Earll 1880), a form of subsidy, that put new life in the industry.

Toward the close of the 19th Century, bank fishing, mostly on Georges and Browns Banks, was a flourishing industry with 174 dory schooners taking part. In 1879, the equivalent of 92 million pounds of round fresh cod was landed by the "salt bankers" (Earll 1880). In 1880, a record was set when 294 million pounds of cod were landed (Sette 1928).

No accurate statistics are available for cod landings prior to 1893, but from that date to the present the data are reliable (table 1). Appropriate conversion factors have been used to change landings of dried-salt fish, green-salt fish, frozen fish, ... to a standard of gutted fresh fish, the state in which cod is landed in the modern fishery.

The changes in cod landings during the period (fig. 2) generally follow the fluctuations in the entire New England fishing industry. The rapid increase of landings in 1905-06 probably reflects the introduction of the otter trawl which replaced the less efficient line trawl (Jensen and Brigham 1963) and hand lines (fig. 3). From 1914 to 1927, fishing for all species was low and this reduced pressure is reflected in the lower cod landings. During the 1930's, fishing activity experienced a rapid series of ups and downs, caused by several inter-related factors, including a scarcity of fish on the grounds and a tie-up of vessels because of the general economic depression then affecting most American industries.

Landings were reduced in the 1940's because the World War II submarine menace

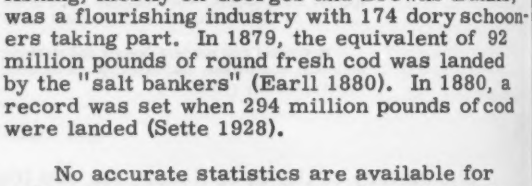

Fig. 2 - Annual New England landings of cod (gutted weight) from New England waters during the period 1893-1962.

Fig. 3 - Hand-lining for cod on Grand Bank in the 1880's (from Goode 1887).

kept many vessels from fishing the offshore banks. In the early 1950's, cod landings again declined when vessels landed more of the abundant--and slightly more valuable--haddock. In the late 1950's, however, cod landings rose when haddock abundance declined drastically. Cod landings during the past 10 years have generally been rising (fig. 4). Of the leading New England groundfish species, cod alone has been landed in ever-increasing quantities during the past decade. Current annual levels have not reached prewar highs, but the trend has been a slow, steady climb--an average increase of more than one-half million pounds per year.

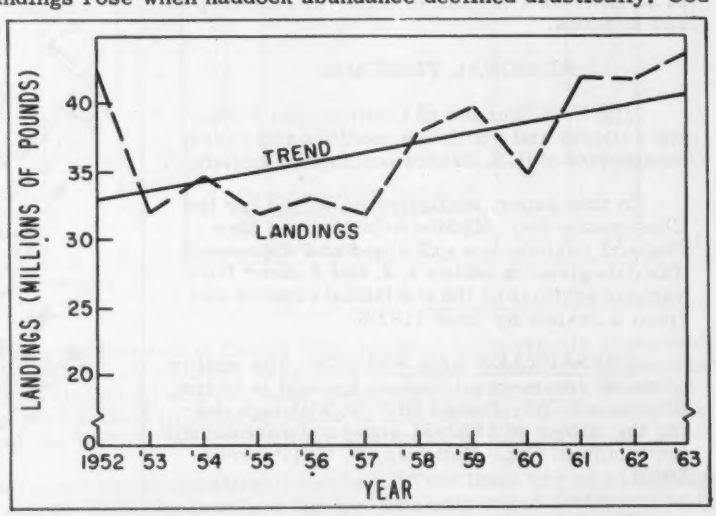

Fig. 4 - Trend in cod landings, 1952-1963 (millions of pounds, round weight).

Most of the cod caught by U. S. vessels are landed at New England ports. In 1962 the landings amounted to 35 million pounds. Cod are also caught in a winter fishery, off the Middle Atlantic States where landings are on the order of 3 million pounds and the Chesapeake States where recent landings have been about 750,000 pounds. Those fisheries are described in later sections.

BIOLOGY AND DISTRIBUTION OF COD

There are two main reasons why cod are so important as a food fish and thus the object of intensive fisheries. They are extremely abundant on many coastal banks in the North Atlantic, and they grow to relatively large size.

Cod abundance is greatest in the Gulf of St. Lawrence, off Newfoundland. In the spring, an otter trawler may take as much as 35 tons of cod per 2-hour tow (Clark and McCracken 1958). The Georges Bank cod fishery is less productive than the Gulf of St. Lawrence fishery; Boston vessels catch cod at an average rate of about 1.5 tons a day.

Cod often grow to large sizes. A cod caught on a line trawl off the coast of northern Massachusetts in 1895 weighed 211.5 pounds and was over 6 feet long (Jordan and Evermann 1905). In the commercial fishery today, many thousands of cod 30 to 40 inches long and weighing 10 to 25 pounds each are caught each year.

Bigelow and Schroeder (1953) reviewed the present state of knowledge of cod biology. Cod spawn in the winter; the peak of spawning is in December. The females are prolific egg producers and may shed 3 to 9 million eggs each, depending on the size of the fish. Only 1 or 2 of the millions of eggs become adult fish.

The adults feed mostly on shell animals (clams, mussels, crabs), squid, and small fish.

Cod range on both sides of the Atlantic Ocean, from the northern Barents Sea to the Bay of Biscay, around Iceland and the southern half of Greenland. They are found along the North American coast from the southern tip of Baffin Island to North Carolina.

Although they are considered groundfish, cod occasionally rise off the bottom, presumably in search of food. Cod have been caught in as little as 1 fathom of water and as deep as 250 fathoms.

REGIONAL FISHERIES

The U. S. Bureau of Commercial Fisheries collects and publishes monthly and yearly summaries of U. S. fishery landings by regions[1/].

In this paper, statistics collected for the Chesapeake Bay, Middle Atlantic, and New England regions are examined and discussed. The data given in tables 1, 2, and 3 come from various sections of the statistical reports and from a review by Sette (1928).

CHESAPEAKE BAY STATES: The southernmost commercial fishery for cod is in the Chesapeake Bay region (fig. 5), although during the winter of 1930-31 some cod were caught just south of Cape Hatteras, N. C. (Pearson 1932).

The fishery is seasonal and the annual landings fluctuate greatly. Few cod are caught within Chesapeake Bay. Hildebrand and Schroeder (1928) stated, "The cod is too rare in Chesapeake Bay to be of economic impor-

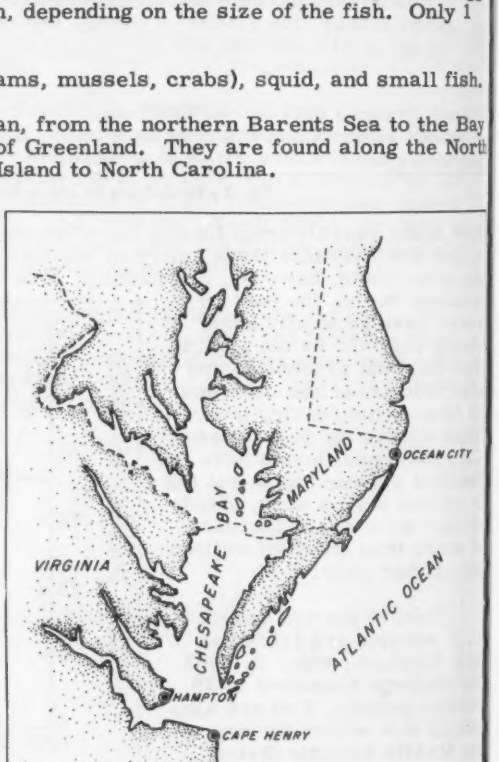

Fig. 5 - Chesapeake Bay states.

1/Fishery Industries of the United States, 1932-1938, U. S. Department of Commerce, Bureau of Fisheries; and, Statistical Digests No. 1-54, Fishery Statistics of the United States, 1939-1963, U. S. Department of the Interior, Fish and Wildlife Service. See also, appendices to the Annual Reports to the Commissioner of Fisheries.

tance, as apparently only occasionally a straggler passes between the (Virginia) capes." They noted that in some years, a few cod were taken in pound nets between Cape Henry, Virginia, and Ocean View, Del., in March.

Records from 1897 through 1962 show that the landings fluctuated from year to year but generally have increased. In 1897, 1,000 pounds of cod were landed; in 1962, 414,000 pounds. Pound nets formerly were the principal gear, but otter trawls and line trawls (called trot lines in the region) have taken more cod in recent years (table 2).

Table 2 - Annual Landings of Cod, Chesapeake Bay States, by Gear, 1897 - 1962

Year	MARYLAND					VIRGINIA					Grand Total
	Otter Trawl	Hand Lines	Lines Long or Set with Hooks	Other	Total	Otter Trawl	Hand Lines	Lines Long or Set with Hooks	Other	Total	
	(1,000 Lbs.)										
1962	No breakdown by gear available				375	No breakdown by gear available				39	414
1961	125	1	663	-	789	1/	-	30	-	30	819
1960	354	1	190	-	545	6	1/	2	1/	8	553
1959	383	-	-	-	383	72	-	28	-	100	483
1958	52	-	-	-	52	15	-	50	-	65	117
1957	3	-	-	-	3	-	-	-	-	-	3
1956	1	-	-	-	1	1/	-	-	-	1/	1
1955	23	-	-	-	23	-	-	-	-	-	23
1954	6	-	-	-	6	2	-	-	-	2	8
1953	-	-	-	-	-	1	-	-	-	1	1
1952	1/	-	-	-	1/	2	-	-	-	2	2
1951	1	-	-	-	1	2	-	-	-	2	3
1950	3	-	-	-	3	3	-	-	-	3	6
1949	1	-	33	-	34	3	-	-	-	3	37
1948	57	-	-	-	57	10	1	-	-	11	68
1947	1	-	20	-	21	14	-	-	-	14	35
1946	17	-	72	-	89	15	-	-	1/	15	104
1945	23	-	92	-	115	3	-	-	-	3	118
1944	8	-	34	-	42	7	1	-	-	8	50
1943	No statistics available					No statistics available					-
1942	1/	-	-	-	1/	-	-	-	-	-	1/
1941	No breakdown by gear available				1	No breakdown by gear available				1/	1
1940	2	-	-	-	2	5	-	-	-	5	7
1939	-	-	-	-	-	4	-	-	-	4	4
1938	-	-	-	-	-	1/	-	-	-	1/	1/
1937	-	-	48	-	48	1	-	-	-	1	49
1936	-	-	-	-	-	1/	-	-	4	4	4
1935	-	-	-	-	-	1/	-	-	-	1/	1/
1934	-	-	-	-	-	1/	-	-	1	1	1
1933	-	-	-	1/	1/	1/	-	-	6	6	6
1932	-	-	-	-	-	11	-	-	11	22	22
1931	-	-	-	-	-	1	-	-	40	41	41
1930	-	-	-	-	-	1/	-	-	50	50	50
1929	-	-	-	-	-	-	-	-	56	56	56
1928	No statistical surveys made					No statistical surveys made					-
1927	No statistical surveys made					No statistical surveys made					-
1926	No statistical surveys made					No statistical surveys made					-
1925 2/	-	-	-	-	-	-	-	-	17	17	17

1/Less than 500 pounds.
2/No statistics available prior to 1925.
Note: Drawn or gutted fresh weight.

The Maryland trot-line fishery, centered at Ocean City, became increasingly important in the late 1950's. The winter otter trawl landings were reduced when abundance of the principal species, fluke (Paralichthys dentatus) and sea bass (Centropristes striatus), declined. In the autumn of 1959, the trawlers shifted to other grounds to fish for cod. Cod had always been present in the area during the winter, but little effort was made to fish for them.

William E. Brey (1963, personal communication) reported, "Trot lines are used because they catch more fish than trawlers. With the trawlers the cod are only taken incidental to the catch of other species.

"The trawlers land cod in late November and December, incidental to the taking of fluke and sea bass and some scup (Stenotomus chrysops). The trot lines are fished starting about January 1 to avoid dogfish (Squalus acanthias) that are present on the grounds until about the last week in December."

The otter trawls fish the shoals off Ocean City in 30 to 40 feet of water; the trot lines are fished about 10 to 20 miles east of Ocean City at depths of 90 to 120 feet. In 1961, the 24 vessels engaged in the fishery landed a record 789,000 pounds of cod at Ocean City (Power 1963). Some details of the Maryland trot-line fishery are described by Hansen (1964).

MIDDLE ATLANTIC STATES: The cod fishery off Delaware, New Jersey, and New York (fig. 6) is also seasonal and takes place largely in the winter. The largest landings are made from November through April and the peak is in December through February. New Jersey is the leading state.

The landings for the period 1897 through 1962 exhibit no clear-cut trend except that perhaps they have declined slightly (table 3). Landings increased from about 6 million pounds in 1897, to a high of 11 million pounds in 1930, and then declined to 4 million pounds in 1961.

Pound nets formerly took large quantities but today few pound nets are fished. Line trawls have been consistently important in the New Jersey fishery but were replaced by otter trawls in the New York fishery. Purse seines and bass pots take small quantities of cod. (See Dumont and Sundstrom 1961 for descriptions of the various kinds of fishing gear.)

June and Reintjes (1957) reported that for the period 1946 through 1953, cod made up 0.7 percent of the inshore otter-trawl catch but only 0.1 percent of the offshore catch in the fishery off Delaware Bay. The otter trawlers fish the inshore grounds in 6 to 12 fathoms east and southeast of the mouth of Delaware Bay and in the offing of Atlantic City, New Jersey, and Ocean City, Md. The offshore grounds are 30 to 60 miles southeast of Delaware Bay, out to 100 fathoms. The long-line vessels fish from just south of Ocean City, N. Y., to Winterquarter Lightship, immediately offshore of the 10-fathom isobath.

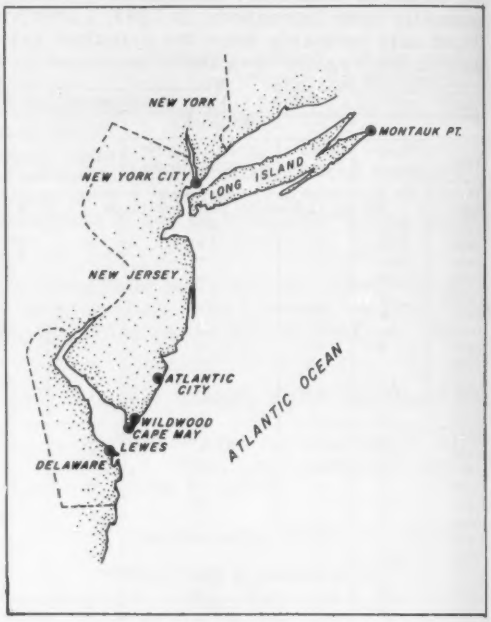

Fig. 6 - Middle Atlantic states.

Vessels that land in New York City and Long Island ports fish Block Island Sound and the offing of Long Island. Some of the larger otter trawlers fish on Nantucket Shoals and Georges Bank in the summer and land their cod in New York City.

NEW ENGLAND STATES: The most productive U. S. grounds for cod are off the coasts of Maine, Massachusetts, and Rhode Island (fig. 7). Some cod from those grounds are landed by vessels that fish out of Connecticut and New Hampshire.

Fig. 7 - New England states.

Table 3 - Annual Landings of Cod, Middle Atlantic States, by Gear, 1897-1962

Year	NEW YORK							NEW JERSEY							DELAWARE					Grand Total
	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Gill Nets	Pound Nets	Other	Total	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Gill Nets	Pound Nets	Other	Total	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Other	Total	
	(1,000 Lbs.)																			
1962	Statistics by gear incomplete						1,028	No statistics by gear available						1,463	No statistics available					Incomplete
1961	815	21	329	-	-	1/	1,165	319	5	2,080	-	-	1	2,405	-	-	32	-	32	3,602
1960	362	18	618	-	-	1/	998	392	16	3,142	1/	3	-	3,553	-	-	19	-	19	4,570
1959	1,051	26	876	-	-	1/	1,953	1,162	22	2,095	-	1	2	3,282	4	-	-	-	4	5,239
1958	1,332	10	835	24	-	-	2,201	689	9	559	-	1	2	1,261	1/	-	-	-	1/	3,462
1957	790	-	860	72	1	-	1,723	62	1	369	-	1	-	433	-	-	-	-	-	2,156
1956	380	-	870	76	-	-	1,326	76	1	962	1/	-	-	1,039	-	-	-	-	-	2,365
1955	1,160	4	978	116	-	1/	2,258	246	1/	685	1/	1/	-	931	-	-	-	-	-	3,189
1954	855	1	408	28	-	-	1,292	201	-	82	-	2	1/	285	1/	-	-	-	1/	1,577
1953	155	26	546	1	-	-	728	2	-	29	-	1	-	32	-	-	-	-	-	760
1952	306	17	652	-	1/	-	975	2	3	300	1/	2	1/	307	-	-	-	-	-	1,282
1951	1,024	50	865	-	-	2	1,941	33	6	552	-	9	-	600	-	-	-	-	-	2,541
1950	1,482	205	839	-	2	-	2,528	132	6	845	-	5	-	988	1/	-	-	-	1/	3,516
1949	1,547	6	784	7	2	1/	2,356	66	13	1,177	1/	130	-	1,386	1/	-	-	-	1/	3,742
1948	1,446	-	293	-	3	2	1,744	257	3	683	1/	337	-	1,280	5	-	-	-	5	3,029
1947	1,139	-	242	-	7	-	1,388	70	28	1,256	1/	60	-	1,414	2	-	-	-	2	2,804
1946	1,963	56	1,145	-	20	-	3,184	No survey							No survey					3,184
1945	1,139	10	585	-	11	-	1,745	782	66	1,396	1	147	2	2,394	32	5	-	-	37	4,176
1944	1,671	50	574	-	5	1/	2,300	578	69	400	-	184	1/	1,231	-	-	18	-	18	3,549
1943	2,100	-	506	-	4	-	2,610	202	49	1,492	-	170	1/	1,913	-	-	2	-	2	4,525
1942	2,528	-	367	-	20	-	2,915	197	68	925	-	356	5	1,551	-	-	19	-	19	4,485
1941	No survey							No survey							No survey					
1940	2,006	24	681	-	6	-	2,717	5	18	829	-	37	1/	889	-	-	33	-	33	3,639
1939	4,479	20	1,622	-	18	-	6,139	2	1	1,623	-	47	-	1,673	-	-	32	-	32	7,844
1938	6,597	182	1,760	-	1/	-	8,539	120	15	1,910	-	206	1	2,252	-	-	57	-	57	10,848
1937	1,676	271	1,837	-	19	-	3,803	41	19	2,245	-	189	70	2,564	-	-	48	-	48	6,415
1936	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1935	693	2	340	-	2	-	1,037	7	7	763	-	42	-	819	-	-	-	-	-	1,856
1934	No survey							No survey							No survey					
1933	3,757	65	396	-	42	-	4,260	16	28	2,543	-	642	-	3,229	-	-	2	-	2	7,491
1932	2,460	140	735	-	2	-	3,337	114	10	3,827	-	164	-	4,115	-	-	29	-	29	7,481
1931	463	82	904	-	16	1	1,466	179	43	5,737	-	248	14	6,221	-	-	51	-	51	7,738
1930	987	153	1,621	-	37	4	2,802	299	137	6,404	-	936	5	7,781	-	-	97	-	97	10,680
1929	929	207	1,894	-	27	3	2,860	741	337	4,178	-	495	246	5,997	-	-	15	1/	15	8,872
1928	No survey							No survey							No survey					
1927	No survey							No survey							No survey					
	Lines (Kind not Specified)							Lines (Kind not Specified)							Lines (Kind not Specified)					
1926	599		1,164	-	-	830	2,593	-		1,767	-	386	64	2,217	-	-	-	-	-	4,810
1925	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1924	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1923	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1922	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1921	43		585	-	40	1/	668	-		607	-	80	-	687	-	-	-	-	-	1,355
1920 2/	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1904	-		1,164	-	6	1	1,171	-		1,212	-	50	-	1,262	-	-	1	-	1	2,434
1903	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1902	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1901	-		1,162	-	10	1/	1,172	-		2,270	-	31	-	2,301	-	-	1	-	1	3,474
1900	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1899	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1898	-		1,966	1	70	4	2,041	-		2,303	1/	280	1/	2,583	-	-	-	-	-	4,624
1897	-		2,073	1/	36	6	2,115	-		2,288	2	1,191	1/	3,481	-	-	-	-	-	5,596

1/Less than 500 pounds.
2/No statistics available 1905-1920.
Note: Drawn or gutted fresh weight.

Cod landings from New England waters fluctuated from a high of 117 million pounds in 1895 to a low of about 21 million pounds in 1953. Landings at New England ports were supplemented, however, with cod caught by U. S. vessels on Browns Bank and other grounds in the offing of Canada. Thus, the low point for cod landed was approximately 32 million pounds in 1953 and again in 1957. Only about 7 percent of the cod landed by U. S. vessels is caught in the high seas off Canada. The landings by gear for the period 1928 to 1962 (table 4) show the same general decline for each of the states.

Although line trawls took most of the cod early in the century, otter trawls have taken an increasingly larger share since about 1908 and today are the most important gear in the New England cod fishery. Hand lines and line trawls still take fair amounts of cod off Massachusetts and Maine and are used to some extent off Rhode Island. Other types of gear include floating traps off Rhode Island, gill nets off Maine and Massachusetts, and pound nets off Massachusetts.

The New England cod fishery is a year-round fishery although the effort shifts seasonally from ground to ground. Most cod are caught by the large otter trawlers (fig. 8) that fish out of Boston for haddock. The most productive grounds are Georges Bank, Browns Bank, and Nantucket Shoals (see Schuck 1952 for a description of those grounds). Medium and small otter trawlers (fig. 9) fish many of the smaller grounds in the offing of Maine and Massachusetts.

Fig. 8 - A Boston large steel otter trawler.

Fig. 9 - A small wooden otter trawler, or dragger.

The principal cod port for many years was Gloucester, but Boston now is the chief port. New Bedford ranks second in volume of cod landed, followed by Gloucester, Provincetown, and Portland, Maine.

MARKET FOR COD

In the beginning of the U. S. cod fishery, the bulk of the catch was split, salted, and dried. Only a small quantity from the shore fisheries, and during the winter from the bank fisheries, was landed fresh. Salt cod was once a staple food on both sides of the North Atlantic and, in addition, great quantities were exported in New England vessels to Africa in exchange for slaves, and to the West Indies (to feed the slaves on sugar cane plantations) in exchange for molasses to be made into rum. Today, no salted cod is produced in the United States; the slight market demand is satisfied with imports from Canada.

UTILIZATION: The evolution from a salt-cod market to a fresh and frozen cod market was largely the result of technological changes at sea and ashore, and ready acceptance of the new products by the public. The important factors that changed the utilization of cod are reviewed by Sette and Fiedler (1929).

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Table 4 - Annual Landings of C

Year	MAINE						NEW HAMPSHIRE					MASSACHU			
	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Gill Nets	Other	Total	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Other	Total	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	
1962	1,096	225	223	580	-	2,124	No statistics available					36,424	1,264	1,636	
1961	1,163	143	418	783	-	2,507	-	-	30	-	30	33,659	752	2,183	
1960	1,362	341	339	855	-	2,897	-	-	20	-	20	27,112	1,027	1,978	
1959	1,162	195	429	907	-	2,693	-	-	-	-	-	32,755	438	1,944	
1958	1,057	155	382	1,141	-	2,735	-	-	-	-	-	31,168	202	1,219	

1961	1,163	143	418	783	-	2,507	-	-	30	-	30	33,659	752	2,183
1960	1,362	341	339	855	-	2,897	-	-	20	-	20	27,112	1,027	1,978
1959	1,162	195	429	907	-	2,693	-	-	-	-	-	32,755	438	1,944
1958	1,057	155	382	1,141	-	2,735	-	-	-	-	-	31,168	202	1,219
1957	1,064	49	272	967	-	2,352	-	-	-	-	-	26,581	105	1,269
1956	1,398	55	316	978	-	2,747	-	-	-	-	-	27,064	150	1,531
1955	1,311	178	429	945	-	2,863	-	-	-	-	-	25,606	155	2,138
1954	1,780	513	504	891	1	3,690	-	-	-	-	-	27,180	213	1,894
1953	1,757	333	672	1,007	-	3,769	-	-	-	-	-	23,654	126	2,848
1952	1,875	1,046	860	833	1/	4,614	-	6	10	-	16	32,301	163	3,720
1951	2,258	918	1,097	1,020	1/	5,293	-	4	8	-	12	34,298	168	5,138
1950	2,791	1,171	1,434	1,217	-	6,613	-	2	3	-	5	39,020	305	5,178
1949	2,325	759	1,393	1,599	-	6,076	-	2	1	-	3	42,231	379	6,504
1948	2,356	917	1,567	1,546	-	6,386	-	1	6	-	7	52,405	480	6,364
1947	1,980	340	899	1,376	-	4,595	-	1	6	-	7	50,096	504	5,492
1946	3,109	822	1,655	1,810	-	7,396	No survey					71,065	681	5,610
1945	2,801	657	1,749	1,715	2	6,924	-	2	32	-	34	125,240	526	4,270
1944	1,930	404	1,789	1,449	1	5,573	-	2	38	-	40	75,444	490	7,192
1943	1,759	776	2,257	1,518	10	6,320	-	3	78	-	81	46,609	485	6,591
1942	1,846	1,167	1,259	667	1	4,940	-	-	35	-	35	45,370	743	9,798
1941	No survey						No survey							No surve
1940	651	206	1,698	633	1/	3,188	-	-	20	-	20	61,239	404	14,271
1939	496	123	2,012	696	1/	3,327	-	-	25	-	25	84,413	399	14,383
1938	500	413	3,076	2,231	-	6,220	-	-	2	-	2	94,266	174	14,589
1937	355	794	3,273	2,627	-	7,049	-	-	1	-	1	106,155	170	16,802
1936	No survey						No survey							No surve
1935	552	506	3,992	3,358	-	8,408	-	11	3	-	14	77,734	673	27,022
1934	No complete statistics						No complete statistics							No complete st
1933	766	1,108	3,356	4,106	-	9,336	-	-	29	-	29	51,228	2,205	32,813
1932	596	2,234	4,459	4,815	1/	12,104	-	4	51	-	55	38,000	1,687	28,653
1931	446	2,156	5,551	4,499	1/	12,652	-	36	24	-	60	36,225	1,633	32,367
1930	784	1,797	7,906	2,997	-	13,484	-	-	158	-	158	40,219	3,362	29,647
1929	931	2,720	10,862	3,148	-	17,661	-	-	4	-	4	19,907	3,928	35,831
1928	64	2,282	9,228	4,613	1/	16,187	-	-	25	-	25	13,556	8,837	40,555

1/Less than 500 pounds.
Note: Drawn or gutted fresh weight.

lings of Cod, New England States, by Gear, 1928-1962

SSACHUSETTS					RHODE ISLAND						CONNECTICUT					Grand Total
ng or Hooks	Gill Nets	Pound Nets	Other	Total	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Floating Traps	Other	Total	Otter Trawl	Hand Lines	Lines, Long or Set, with Hooks	Other	Total	All Gear, All New England States
..... (1,000 Lbs.)																
6	490	5	10	39,829	No statistics by gear available					620	No statistics available					Incomplete by gear
3	1,555	3	13	38,165	762	117	96	91	-	1,066	364	36	-	-	400	42,168
8	1,142	2	4	31,265	456	143	78	146	-	823	225	24	-	-	249	35,254
4	1,417	4	18	36,576	824	188	190	43	-	1,245	242	1/	-	-	242	40,756
9	948	49	6	33,592	522	172	439	114	-	1,247	208	1	-	-	209	37,783

3	1,555	3	13	38,165	762	117	96	91	-	1,066	364	36	-	-	400	42,168
8	1,142	2	4	31,265	456	143	78	146	-	823	225	24	-	-	249	35,254
4	1,417	4	18	36,576	824	188	190	43	-	1,245	242	1/	-	-	242	40,756
9	948	49	6	33,592	522	172	439	114	-	1,247	208	1	-	-	209	37,783
9	410	-	24	28,389	385	133	136	185	-	839	329	1	-	-	330	31,910
1	372	1/	11	29,128	389	128	106	110	-	733	154	-	-	-	154	32,762
8	612	1/	16	28,527	340	33	61	359	-	793	185	1/	-	-	185	32,368
4	700	1/	3	29,990	494	238	122	467	-	1,321	239	-	-	-	239	35,240
8	832	1/	5	27,465	141	354	49	63	-	607	58	1/	-	-	58	31,899
0	720	7	17	36,928	215	367	-	91	1/	673	170	1/	-	-	170	42,401
8	1,089	6	13	40,712	383	471	-	307	-	1,161	302	1/	-	1/	302	47,480
8	1,272	87	5	45,867	227	849	-	151	-	1,227	256	-	-	-	256	53,968
4	1,277	14	14	50,419	489	706	-	513	-	1,708	590	1	-	-	591	58,797
4	1,495	1/	1/	60,744	301	149	52	288	-	790	310	7	-	-	317	68,244
2	2,388	32	8	58,520	194	243	85	153	-	675	230	13	-	-	243	64,040
0	2,902	28	66	80,352	258	253	155	116	-	782	175	16	-	-	191	88,721
0	2,549	102	73	132,760	434	491	153	40	-	1,118	235	2	-	-	237	141,073
2	3,681	92	66	86,965	430	354	103	19	-	906	272	2	-	-	274	93,758
1	4,398	72	54	58,209	75	454	158	19	-	706	222	2	-	1/	224	65,540
5	3,293	86	82	59,372	29	423	190	22	-	664	81	-	-	-	81	65,092
o survey							No survey						No survey			
1	2,568	45	33	78,560	1	248	196	20	-	465	49	7	-	1/	56	82,289
8	2,282	29	13	101,519	2	433	55	23	-	513	34	1/	-	-	34	105,418
9	2,191	22	72	111,314	17	612	94	13	-	736	100	11	-	-	111	118,383
2	3,140	14	46	126,327	19	863	165	20	-	1,067	157	2	-	-	159	134,603
o survey							No survey						No survey			
2	5,143	15	47	110,634	6	403	166	33	-	608	161	4	505	-	670	120,334
lete statistics							No complete statistics						No complete statistics			
3	3,085	3	55	89,209	5	610	164	128	1/	907	44	23	80	-	147	99,628
3	3,111	4	26	71,481	66	461	152	42	1	722	1,482	61	370	-	1,913	86,275
7	2,928	91	33	73,277	39	581	135	149	1/	904	5,129	76	424	-	5,629	92,522
1	4,199	42	54	77,523	80	942	188	332	11	1,553	8,829	-	86	-	8,915	101,633
1	4,344	51	85	64,146	119	1,570	543	273	6	2,511	2,452	86	139	-	2,677	86,999
1	4,653	45	18	67,664	142	1,562	243	307	2	2,256	3,809	166	226	-	4,201	90,333

A steady downward trend in the landings of salted fish of all species began toward the end of the 19th Century. For example, in 1893, salted fish landings in Gloucester and Boston amounted to about 46 million pounds for all species, but by 1927 they declined to about 6.7 million pounds. The decrease was caused by lower landings of salted cod. In 1893, salted cod amounted to over 34 million pounds, and fresh cod to 20 million pounds. In 1927, salted cod amounted to about 2 million pounds and fresh cod to about 61 million pounds.

Before the development of efficient, inexpensive ways to manufacture ice, fishing vessels carried salt to preserve the catch at sea. The vessels were sailing schooners and the men fished with hand lines or long lines. Thus, it took longer to fill the holds with fish and longer to return to port.

Dramatic changes in the industry resulted from improved equipment to make ice, the introduction of otter trawls early in the present century, and the transition to steam (later diesel) engines for power. The vessels could carry enough ice to last the entire trip, the trawls caught large quantities of fish. and the vessels were able to spend far less time going to and from the banks.

Shortly after World War I, a quick-freezing process, readily adaptable to freezing fish, was developed. The industry began to market quick-frozen, boneless, ready-for-the-pan fillets that quickly changed the public's taste from salted to fresh fish. Those developments also helped contribute to the decline in the market for cod. Haddock, ocean perch or redfish (Sebastes marinus), and other species that did not salt well were widely marketed as frozen fillets.

Today, cod are landed in four market categories: scrod, $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds; market, $2\frac{1}{2}$ to 10 pounds; large, 10 to 25 pounds; and extra large, over 25 pounds. The domestic landings are filleted or steaked and sold fresh or frozen. A small quantity is frozen in blocks for manufacture later to fish portions and cooked breaded fish sticks.

Despite the decline in U. S. cod landings, high domestic consumption of the species is satisfied by large imports of cod fillets and blocks, mostly from Canada, Iceland, and Denmark. In 1963, about 180 million pounds of cod fillets and cod fillet blocks were imported.

CONCLUSION

The U. S. cod fishery in the Northwest Atlantic has undergone many changes during the past 300 years. It began as a small boat, inshore fishery, but today is a large boat, offshore fishery. Technological improvements in handling and processing the catch helped decrease consumer demand for cod. Thus, the landings have declined to about one-third of what they were 50 to 75 years ago. The annual volume of the domestic catch, however, plus imports of frozen cod in several forms, suggest that the species plays and will continue to play an important economic role in fishing ports of the New England and Middle Atlantic states.

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TUNA CREOLE CHOWDER FOR BUSY PEOPLE

Take a tuna chowder break. Here's a spicy quick chowder you can make in moments. As the Tuna Research Foundation points out, convenient canned tuna is high in protein and other essential nutrients. It helps you fix up a hearty and nourishing chowder.

Tuna Creole Chowder is thrifty, too. Even the delicate vegetable oil in which the tuna is packed is used in the recipe, to gently saute green pepper and onion. Tuna's mild taste and tender texture combine to a "T" with the subtle seasonings.

QUICK TUNA CREOLE CHOWDER

2 cans (6½ or 7 ounces each) tuna in vegetable oil
1 small onion, chopped
1 medium green pepper, chopped
1 clove garlic, minced
1 can (10½ ounces) bouillon
1 can (1 pound) tomatoes
1 can (1 pound) corn
½ teaspoon salt
½ teaspoon chili powder
¼ teaspoon thyme
¼ teaspoon Tabasco

Drain ¼ cup oil from tuna into saucepan. Add onion, green pepper, and garlic; cook until onion is tender but not brown. Stir in remaining ingredients with tuna. Simmer 10 minutes. Makes 4 servings.

SOME OBSERVATIONS ON THE DISTRIBUTION OF PENAEID SHRIMP IN EASTERN VENEZUELA 1/

By N. Alam Khandker*

ABSTRACT

From the presence of larvae in the plankton samples and catching of adults in trawls a preliminary survey was made on the distribution and abundance of Penaeid shrimp around the Island of Margarita and in the Gulf of Paria. The species found around the Island of Margarita were Penaeus brasiliensis (brown), P. aztecus (brown), Xiphopenaeus kroyeri (sea bob), Hymenopenaeus robustus (royal-red), and Aristaeomorpha foliacea, and in the Gulf of Paria P. schmitti (white), P. aztecus, Xiphopenaeus kroyeri, and Trachypenaeus similis.

INTRODUCTION

Off the eastern part of Venezuela there are vast ocean areas with depths of less than 100 fathoms. Those areas are part of the Continental Shelf around the Island of Margarita, the delta of the River Orinoco, and the Gulf of Paria. The Gulf of Paria has an average depth of only 10 fathoms with large estuarine areas. At present there is no offshore fishery for shrimp

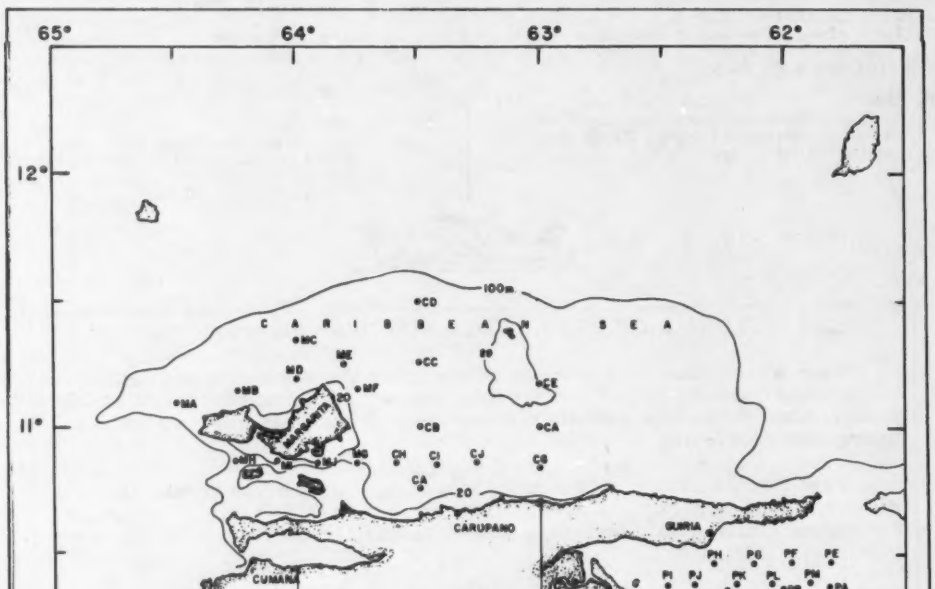

Fig. 1 - Shows 37 stations in April and August 1963 at which shrimp larvae were collected from plankton samples.

1/A part of the paper is based on some results of cruise 87 of the exploratory fishing vessel Oregon of the U.S. Bureau of Commercial Fisheries, Pascagoula, Miss.

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U. S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
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in that area. Apparently those areas seem to have potentiality and Fiedler (1947) indicated that there should be rich shrimp fishing grounds in the Gulf of Paria.

To find out the distribution and abundance it is necessary to do exploratory fishing. The only available information about exploratory fishing in those areas is of limited trawling done by the M/V Oregon of the U. S. Bureau of Commercial Fisheries in the delta of River Orinoco (Bullis and Thompson 1959). Plans were made to explore first the nearer waters, the Continental Shelf around the Island of Margarita, and the Gulf of Paria.

METHODS AND RESULTS

As a preliminary step it was decided to look first for shrimp larvae as an indicator for the presence of adults. Shrimp larvae were collected from plankton samples at 37 stations (fig. 1) in April and August 1963. At every station a vertical haul was made for 15 minutes with a half-meter plankton net.

Table 1 - Number of Larvae Collected in April 1963

Stations	Depth		Penaeidae	Penaeus
	Meters	Feet	(Number)	
MA	26	85	385	0
MB	58	190	10	5
MC	32	105	5	0
MD	28	92	5	0
ME	30	98	0	0
MF	20	66	0	0
MG	25	82	55	55
CA	33	108	10	10
CB	46	151	0	0
CC	40	131	15	0
CD	67	220	20	0
CE	40	131	0	0
CF	50	164	0	0
CG	30	98	0	0
PA	25	82	10	0
PB	30	98	35	25
PC	20	66	10	10
PD	20	66	10	10

Table 2 - Number of Larvae Collected in August 1963

Stations	Depth		Penaeidae	Penaeus
	Meters	Feet	(Number)	
MH	63	207	105	0
MI	40	131	30	0
MJ	15	49	0	0
MG	25	82	50	30
CH	45	148	35	30
CI	50	164	190	190
CJ	59	194	15	15
PE	20	66	0	0
PF	30	98	0	0
PG	30	98	25	25
PH	20	66	0	0
PI	12	39	0	0
PJ	15	49	0	0
PK	25	82	0	0
PL	25	82	0	0
PM	30	98	0	0
PN	25	82	0	0
PO	30	98	0	0
PP	15	49	35	35
PQ	10	33	5	5

Tables 1 and 2 show the number of larvae at the different stations. Larvae of Penaeid shrimp were found in 20 stations, and in 12 stations larvae of the genus Penaeus. For lack of work on the early life history of many Penaeus sp. it was not possible to identify all the larvae to the specific level. However, an attempt was made to identify the postlarvae as suggested by Williams (1959). Accordingly, postlarvae at stations MG, CA, CH, CI, and CJ of the Caribbean Sea were identified as brown shrimp (P. aztecus). Postlarvae at stations PB, PC, PD, PG, PP, and PQ of the Gulf of Paria resembled that of white shrimp (P. setiferus) as described by Pearson (1939), but probably they were South American white shrimp (P. schmitti) which is the common species known from that area.

Later on in October of that year an opportunity was found to do some exploratory fishing when the author was invited to participate in cruise 87 of the Bureau of Commercial Fisheries exploratory fishing vessel Oregon. Through the cooperation of vessel scientific personnel it was possible to do some trawling in those areas. Drags of one hour's duration were conducted with a 40-foot flat trawl.

In one drag at 225 fathoms north of the Island of Margarita small quantities of royal red shrimp (Hymenopenaeus robustus) and another penaeid shrimp (Aristaeomorpha foliacea) were caught. Two other drags were made in the same area but in lesser depths, of which one produced 35 individual brown shrimp (Penaeus brasiliensis) at a depth of 35 fathoms. On the eastern side of the Island of Margarita 8 drags were made. Although most fishing was carried out at depths between 15 and 20 fathoms, the best catch, consisting of only 35 individual P. aztecus, was made in 35 fathoms north of Carupano.

Four drags were done in the Gulf of Paria. In depths greater than 10 fathoms a small number of P. aztecus were caught. Catches in lesser depths were also small. In one haul 35 and in another 50 P. schmitti were caught along with a few P. aztecus, Xyphopenaeus kroyeri, and Trachypenaeus similis.

The author did some trawling in the northern part of the Island of Margarita in March 1964. This was done with a 6 x 1½ foot "beam trawl." Xyphopenaeus kroyeri were found abundant at depths below 5 fathoms. Some P. brasiliensis were caught between 20 to 35 fathoms, but the quantity was always very small and did not suggest any possibility of commercial exploitation.

Fig. 2 - Research vessel Guaiqueri of the Instituto Oceanografico, Universidad de Oriente, Cumana, Venezuela.

CONCLUSION

The results of these explorations show that favorable trawling bottom exists in the eastern part of the Island of Margarita and in the Gulf of Paria and with the best showings of P. aztecus in the first mentioned area and of P. schmitti in the last mentioned area. It was further observed that in those areas shrimp have a different depth distribution than normally found in the Gulf of Mexico. Renfro and Brusher (1962) in their exploratory fishing reported the capture of the greatest number of P. aztecus between 15 to 20 fathoms. Kutkuhn (1962) also reported that in the Apalachicola area, year-round exploitation rarely goes beyond 20 fathoms. In the Gulf of Mexico white shrimp (P. setiferus) are mostly taken from 20 fathoms or less, but in the Gulf of Paria P. schmitti were found only in depths below 10 fathoms. However, more exploratory fishing will be necessary before the distribution and the abundance can be accurately delineated.

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Note: Acknowledgements--The author is grateful to Harvey Bullis for the invitation to take part in the M/V Oregon cruise. The author also wishes to thank James Carpenter and others aboard the vessel for their cooperation.

Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.

TRENDS AND DEVELOPMENTS

Alaska

FOREIGN FISHING ACTIVITY OFF ALASKA, APRIL 1965:

U.S.S.R.: The Soviet trawling fleet off Southeast Alaska operated primarily in the area from west of Cape Ommaney northward to west of Cape Spencer throughout April 1965. But the size of that fleet became smaller as major trawl fisheries developed in other areas of the Gulf of Alaska. The trawling fleet off Southeast Alaska in April was composed of about 55 trawlers, 12 freezer vessels, and a few support vessels. Some of the vessels left the fleet early in April and for a short period fished off the west coast of Vancouver Island, British Columbia. Results of trawling in that area were apparently unsatisfactory for all the vessels reportedly returned to join the Gulf of Alaska fleets.

Fig. 1 - Soviet medium fish trawler (SRT) in Gulf of Alaska.

Another major Soviet trawling fleet began developing early in April south of the Kenai Peninsula between Middleton Island and Portlock Bank east of Kodiak. By the end of the month that particular fleet had been expanded and included about 70 vessels comparable to the trawling fleet off Southeast Alaska.

Soviet trawling efforts in the western Gulf of Alaska, primarily between Albatross Bank

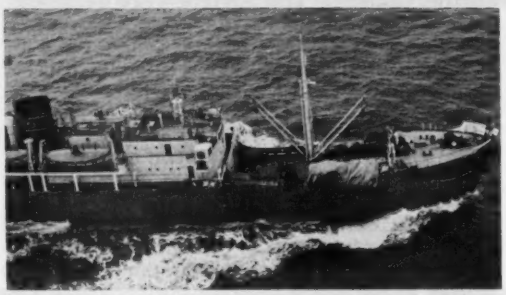


Fig. 2 - Soviet transport refrigerated vessel in Bering Sea.

off southwest Kodiak Island and the Shumagin Islands, were also increased during the month. About 30 trawlers and a few freezer vessels were believed working in the area, including about 8 BMRT factory trawlers. The factory trawlers appeared to be producing fish meal, but it was not known whether they were using whole fish or just fish wastes for meal production.

Observations throughout April were that the Soviet trawling fleets off Southeast Alaska, south of the Kenai Peninsula, and in the western Gulf of Alaska were fishing primarily for Pacific ocean perch, with no significant incidental catch of other species.

Fig. 3 - Soviet king crab factoryship Pavel Chebotnygin.

The Soviet flounder fishing fleet operating in outer Bristol Bay was disbanded by the close of the month, with many of the vessels

reassigned to trawling fleets in the Gulf of Alaska.

Soviet sources announced that 5 of their SRT-M type trawlers had been fishing shrimp in the Gulf of Alaska since February 1965, and that by late April had caught nearly 2¼ million pounds of shrimp. It was reported that 2 additional SRT-M trawlers had recently been sent to the Gulf of Alaska to join the shrimp fishery. The Soviets were believed to be fishing the known stocks of shrimp in the Kodiak region where they conducted a shrimp fishery in fall 1964.

After moving out of the king crab pot sanctuary in late March, the king crab factoryship Pavel Chebotnyagin and her two sisterships Aleksandr Obukhov and Konstantin Sukhanov worked their tangle-net fishery northeast of Unimak Pass throughout most of April. Last April reports were that the Soviet king crab fleets were about 80 miles northwest of Port Moller in the same area as the Japanese king crab fleets.

Japan: A second shrimp fishing fleet, the factoryship Einen Maru, accompanied by 15 trawlers, began operations about 45 miles northwest of the Pribilof Islands in late April. The factoryship Chichibu Maru, which has 12 trawlers assigned to her, also operated on the accustomed shrimp fishing grounds north and west of St. Paul Island throughout April.

Fig. 4 - Japanese factoryship Einen Maru freezes and processes shrimp caught by its 15 trawlers.

The first of 7 Japanese fish meal fleets scheduled to operate in the eastern Bering Sea in 1965 appeared on the outer Bristol Bay "flats" in late April. That fleet, composed of the factoryship Gyokuei Maru and 26 trawlers, reportedly left Japan on April 9 and arrived on the fishing grounds 85 miles north of Unimak Pass about two weeks later.

Throughout April, the Japanese king crab fleets of the factoryships Tokei Maru and Tainichi Maru, with 10 tangle-net handling trawlers, operated in outer Bristol Bay northwest of Port Moller.

Japanese vessels did not participate in the halibut long-line fishery in the eastern Bering Sea which began in late March of this year. The only long-line fishing reported as of the end of April was the processing-fishing vessel Kotoshiro Maru, licensed to be accompanied by 3 long-line vessels, operating near Semisopochnoi Island in the western Aleutians.

Fig. 5 - Workboat astern and wooden trawler alongside the Japanese fish meal factoryship Gyokuei Maru.

The Japanese factory trawler Tenyo Maru No. 3 was reportedly operating north of Atka Island in the central Aleutians in late April. It was believed that 5 other factory trawlers and one smaller side trawler said to be operating off Alaska were also fishing along the Aleutian Islands.

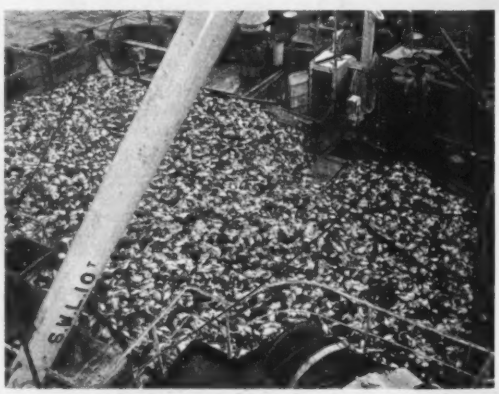


Fig. 6 - Fish on the foredeck of Japanese fish meal factoryship Gyokuei Maru.

All 4 of the Japanese trawlers licensed to operate in the Gulf of Alaska by May 1965 were fishing in the area in April. The ves-

Takachiko Maru fished for Pacific ocean perch southwest of Unimak Pass throughout April. The Taiyo Maru No. 82 shifted from the Bering Sea about mid-month and joined the Takachiko south of Unalaska Island. The Daishin Maru No. 12 alternated between Albatross Bank off southwest Kodiak and Portlock Bank east of Kodiak. Except for a brief period in early April when the Daishin No. 12 fished for shrimp off southwest Kodiak, her trawling efforts have been for Pacific ocean perch. The fourth Japanese Gulf trawler Akebono Maru No. 53 appeared on Albatross Bank about mid-April. All of those vessels are factory trawlers of 1,500 to 3,500 gross tons.

* * * * *

ANNUAL KELP AND
HERRING EGG HARVEST:

The annual harvest of kelp and herring eggs was conducted in the Sitka and Craig areas during April. Participation in that fishery has increased from 2 buyers in 1962 (the first year commercial harvesting was permitted by the state) to about 18 buyers in 1965. During the period, the price to the producer increased from 5 to 20 cents a pound and the number of producers has jumped from 40 to over 200. In 1962, about 48,000 pounds of kelp and herring eggs were harvested. The 1965 quota was set at 300,000 pounds, of which the Craig area was allotted 200,000 pounds and the Sitka area 100,000 pounds.

One processor, operating a fleet of 4 salmon seiners in the Sitka area, took an estimated 40,000 pounds of kelp and herring eggs. The seiners picked up the egg-ladened kelp from harvesters working in skiffs. The seiners also provided the boxes and supplies to the harvesters and hauled the kelp to Craig where a crew of 50, working aboard scows, did the salting and packing. The method of processing involves packing 200 pounds of kelp into 30-gallon kegs, layered with 100 pounds of salt. Once filled, the kegs are flooded with saturated brine and sealed. The kegs, or barrels, are then shipped south ready for export to Japan.

Alaska Fisheries Investigations

WINTER SURVIVAL OF PINK SALMON EGGS:

Pink salmon eggs in Southeast Alaska and parts of Prince William Sound seem to have shown good survival in spite of severe low winter temperatures. A deep snow cover may have been the reason. Prince William Sound winter survival observations showed considerable variability in survival, with the excessive mortalities attributed to secondary effects of the severe earthquake of a year earlier. In many sections, areas with excellent egg survival were interspersed with areas of 100-percent mortality. An aerial photographic study during April of Prince William Sound pink salmon streams showed that agradation, degradation, and channel relocations were still in progress as a result of land elevation changes during the earthquake.

* * * * *

PINK SALMON TRANSPLANT SUCCESSFUL:

During fall 1964, biologists of the U.S. Bureau of Commercial Fisheries, in cooperation with Alaska's Department of Fish and Game, used a commercial fishing vessel equipped with live tanks to introduce 1,305 female pink salmon into Sashin Creek at Little Port Walter. The transplant produced about 310,000 preemergent alevins or about 14 percent of potential egg deposition, which is in the range of higher levels of fresh-water survivals observed previously at Sashin Creek. The production of 1964 brood year fry exceeded that of all other even-numbered brood years since 1942 and odd-numbered brood year fry for five years since 1941. Unless the introduced 1964 brood of pink fry experience a marine mortality in excess of 99 percent, the returning run in 1966 will be larger than the parent run.

The use of commercial fishing vessels equipped with live tanks makes it possible to capture large numbers of adult pink salmon and transport them to barren or low-producing streams at relatively low cost. This technique may allow the reestablishment of many runs previously destroyed, as well as allow the introduction of pink salmon in newly created spawning areas.

* * * * *

BROOKS LAKE
RED SALMON FRY SURVIVAL:

A general appraisal of fresh-water mortality rates with the use of computer equipment shows that the average monthly mortality rates of red salmon fry have been 14.7 percent. An analysis of Brooks Lake red salmon stocks for the 1957-1961 brood years

shows monthly mortality rates ranging from 16.9 to 20.7 percent, indicating substantially lower survivals in Brooks Lake compared to the rest of the Naknek system. The Ugashik system shows an average monthly mortality rate of 14.2 percent.

American Fishery Advisory Committee

RECOMMENDATIONS MADE AT WASHINGTON, D. C., MEETING:

Increased development of the underutilized fishery resources of the United States was recommended by the American Fisheries Advisory Committee which met in Washington, D. C., during May 1965. The Committee, established in 1955 to advise the Secretary of the Interior on fisheries matters, concluded that a larger domestic fishery catch and a subsequent improvement of the American fishing industry would result in stronger competition with rising imports of fishery products.

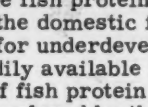
A five-step program was outlined by the Committee as a means of increasing the commercial catch by United States fishermen: (1) Federal construction of one or more vessels of a proven type for use by the industry in demonstrating new methods of profitably harvesting underutilized fishery resources; (2) Automation of harvesting and processing techniques to reduce increasing labor costs; (3) Development of new and high-quality products with built-in marketing services designed to attract consumers; (4) Studies leading to establishment of uniform State commercial fishing regulations, and removal of those which unnecessarily inhibit development of fishery resources; and (5) Continuation of intensive efforts to develop an acceptable fish protein concentrate.

Other recommendations made by the Committee included enactment of legislation to extend the Fishery Loan Program, scheduled for termination on June 30, 1965, and the continuation of research on the effects that pesticides, pollution, and the destruction of fish spawning and nursery areas have on fishery resources.

Staff members of the U. S. Fish and Wildlife Service briefed the Committee on domestic and international problems affecting the United States fishing industry; fisheries legislation; oceanography; quality improvement in fishery products; special programs involving the International Biological Program, International Cooperation Year, the Potomac River Project, and the program of the Bureau of Commercial Fisheries during fiscal year 1966.

The Committee agreed that development of an acceptable fish protein concentrate would provide the domestic fishing industry with a market for underdeveloped fishery resources readily available in coastal waters. Scale models of fish protein concentrate processing-units developed by the U. S. Bureau of Commercial Fisheries at Beltsville, Md., were inspected by the Committee during the Washington, D. C. meeting.

Note: See Commercial Fisheries Review, December 1964 p. 25.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 65-A-2-Pelagic Fish (April 1-10, 1965): The objectives of this cruise by the California Department of Fish and Game research vessel Alaska in the coastal waters of southern California from Hutington Beach to Ventura were to: (1) experiment with the midwater trawl to improve its effectiveness as a sampling device (general objectives were to improve net opening, ease of handling, and fishing-depth determination); (2) test the wireless depth telemetering system in the field and develop operational techniques; (3) evaluate two small midwater trawls for possible use on pelagic fish surveys; and (4) observe anchovy schooling behavior and reaction to midwater trawling.

The large (50-foot) midwater trawl used on the cruise was fished with various otter door hook-ups and net-spreading devices. The best apparent net opening was obtained with regular large hydrofoil doors positioned 3 fathoms in advance of the headrope, and some new hydrofoil quarter-doors 1½ fathoms ahead of the footrope. The upper bridle was 46½ fathoms long, and the lower was 45. Twenty-four trawl floats were attached to the headrope. This arrangement gave a vertical net opening of 42 feet and an estimated 40- to 45-foot horizontal opening. The most significant improvements obtained were a greater

horizontal spread of the foot rope and easier handling during the setting operation. The longer bottom bridles caused the net to fish 5 fathoms deeper than previously.

Net fishing depths were determined at various speeds and with various amounts of cable. The ratio of cable out to fishing depth ranged from 6.5 to 1 with 40 fathoms out to 3 to 1 with 200 fathoms out. The net reacted slowly to speed and cable length changes. It usually required 5 or more minutes for the net to stabilize at a constant depth.

A wireless depth telemetering system (Furuno Net Sonde model FNZ-5) was tested with excellent results. With that system, net depth, fish schools, and sea bottom are simultaneously displayed on an echo-sounder depth recorder. A dial readout is also provided for more precise net depth determinations. The system was operated to its maximum depth of 65 fathoms and performed well under all weather conditions.

A 25-foot midwater trawl was fished to determine its value as a sampling device on pelagic fish surveys. But the trials were limited by extremely poor weather and a scarcity of fish. Comparative advantages over the large net were ease and safety of handling, reduced manpower requirements, and the ability to operate under more adverse weather conditions.

A 10-foot midwater trawl was fished from a skiff. Small hydrofoil doors gave an excellent horizontal spread but excessive door resistance and small mesh size reduced towing speed. Such a trawl may be useful for capturing fish samples in extremely shallow bays, or in "dirty" water. The vessel's 50-foot trawl was towed toward anchovy schools located visually. Aircraft and vessel observations showed the schools moved out of the vessel's path as it approached, with the result that catches were small or nonexistent. Many small anchovy schools were located by echo-sounder in deep water during daylight hours. Tows made through those areas yielded up to 150 pounds in a 20-minute tow. With the approach of darkness those anchovy schools scattered and rose close to the surface.

The weather was bad throughout the cruise and curtailed much of the scheduled work. No large concentrations of fish were located or fished during this cruise.

Note: See Commercial Fisheries Review, May 1965 p. 13.

Central Pacific Fisheries Investigations

FORECAST FOR SUMMER 1965
HAWAIIAN SKIPJACK TUNA FISHERY:

Environmental conditions for catching skipjack tuna (aku) in Hawaiian waters looked favorable starting in February this year, according to scientists of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii, who predict that the summer 1965 skipjack tuna catch will be average or above average.

The skipjack is Hawaii's dominant fishery, with about 10 million pounds landed every year. The peak of the catch is midsummer and the July take is about 10 times that in February.

The Bureau's Honolulu Laboratory's scientists have found that at least two environmental conditions affect the availability of skipjack during the summer. One is the type of water around the islands during the peak fishing season. The other environmental condition is the time that the nearshore waters start to become warmer in late winter or early spring. Running westward across the Pacific lies one of the major oceanic currents, the California Current Extension, which sweeps from the coast of Mexico to join the Equatorial Current west of the international date line. Its waters are lower in salinity than those of the adjacent North Pacific Central Water. In most summers, the northern edge of the California Current Extension moves northward, bathing the Hawaiian Islands in warm water of low salinity.

When the water starts warming up in early February and when the lower salinity water reaches the islands in the summer, the skipjack tuna catch is good, or has been for the 13 years for which precise records of the U. S. Bureau of Commercial Fisheries are available. When the water warms up in late March and the lower salinity water does not reach the islands in summer, the catch is low. When one of those conditions occur but not the other, the skipjack catch is about average.

The Bureau scientists say that no one can yet predict whether the lower salinity water will or will not reach the islands, but the onset of the warming trend is readily measured.

This year (1965), the scientists say initial warming of the water began late in February,

which is one indication that the 1965 skipjack tuna catch will be average or possibly above average. Annual mean salinities this past April seemed to show a declining trend. On that basis, an oceanographer of the Bureau's Honolulu Biological Laboratory concluded that the environmental conditions looked favorable and that average or above average availability of skipjack in Hawaiian waters could be expected during summer 1965.

* * * * *

TUNA BEHAVIOR AND RESPONSE TO SIGNALS STUDIED:

Live tuna caught in Hawaiian waters during an April 1965 cruise by the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert were returned to the Bureau's Biological Laboratory at Kewalo Basin, Honolulu, Hawaii, for fish behavior studies. A total of 68 live tuna in the Laboratory's holding tanks were being taught to respond to simple electrical and acoustical signals in the course of research on what and how well tuna hear and see.

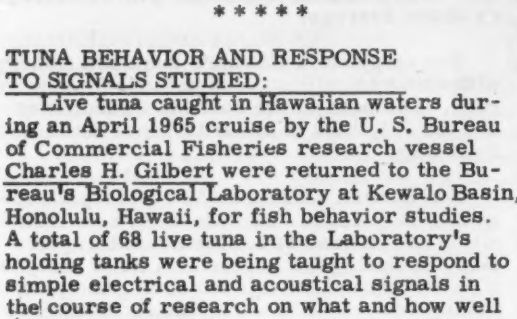


Fig. 1 - Behavior study tank (without quonset hut mounted) for skipjack tuna.

The information gained from the fish behavior studies is a basic requirement if fishing techniques are to be significantly improved, says the Area Director of the U. S. Bureau of Commercial Fisheries at Honolulu. The fish behavioral work is directed by a scientist of the Bureau's Honolulu Biological Laboratory who is assisted by a group of biologists who know more about the world of the tuna, probably, than anyone else anywhere.

One of the interesting results that has come out of those studies is knowledge that tuna really cannot see nor hear very well, in the human sense. Work at the laboratory has shown that tuna cannot distinguish forms of objects underwater nearly as well as humans can. One of the laboratory biologists did this by giving himself and his coworkers the same tests he gave the fish. The biologist who is studying how well tuna hear finds they are most responsive to sounds near 500 cycles a second and are deaf to sounds higher than 2,000 cycles a second. The human ear, by comparison, hears sounds up to 15,000 cycles a second or more.

At the Bureau's laboratory, daily training sessions are held with the tuna. In learning ability, the fish are much like people, the biologists say. Some are very quick to learn, others seem to learn nothing. The "star pupil" was a skipjack tuna that learned the simple visual acuity routine in 3 days. If a fish does not learn within 1 week, it is replaced with another.

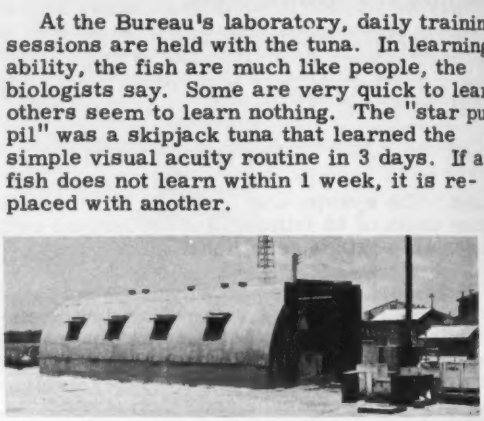


Fig. 2 - Skipjack tuna behavior study tank with quonset hut mounted.

The tuna collected by the Bureau's research vessel Charles H. Gilbert cruise were caught on Pengiun Bank and on the leeward side of Oahu between Honolulu and Kaena Point. Tuna caught at sea were placed in portable tanks aboard the vessel. On return to the laboratory at Kewalo Basin, they were put in 24-foot portable swimming pools which constitute the fish-testing facility. Tuna are very sensitive to handling. It is only after a long period of research at the Bureau's Honolulu Laboratory that methods have been designed to keep them alive for long periods.

Note: See Commercial Fisheries Review, May 1965 p. 41.

* * * * *

TRADE WIND ZONE OCEANOGRAPHIC STUDIES CONTINUED:

M/V "Townsend Cromwell" Cruise 14 (March 8-28, 1965): A predominantly southwesterly flow south of the Hawaiian Islands and a variable and complex flow to the south again was the characteristic flow pattern of

the area investigated during the March 1965 cruise of the research vessel Townsend Cromwell. The vessel, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii, on March 28 completed the 13th in a series of oceanographic cruises to determine the rate of change in the distribution of properties in the trade wind zone of the North Pacific Ocean. The area of operations was in the Central North Pacific bounded by latitudes 10° N., 27° N., and longitudes 148° W., 158° W.

The flow pattern observed during March, like that from the previous month's cruise, differed from the flow pattern of a year earlier. The eddies observed during this latest cruise were less well developed in the northern portion of the cruise area while the southwesterly flow in the southern portion was stronger. As compared with observations in February 1965, the more sharply sloping depth of the 20° C. isotherm surface showed that the latter flow had intensified. A complex system of eddies still remained east of the islands during this latest cruise.

During the cruise, surface temperatures began to rise to 26° C. (78.8° F.) south of 16° N., an increase of 1° C. since the previous cruise. North of 20° N., however, cooling had continued. The lowest temperature recorded was 20.5° C. (68.9° F.) in the northeastern corner, a drop of 0.5° C. since February.

A total of 43 oceanographic stations was occupied along the cruise track. At each station temperatures and samples for salinity analyses were obtained at depths to 1,500 meters (4,921 feet). In addition, deep casts to 4,000 meters (13,123 feet) were taken at stations 21 and 25 and a cast to 5,000 meters (16,404 feet) was taken at station 38.

Bird flocks sighted during the cruise numbered 43 as compared with 41 in February. In contrast with the previous month's cruise when most were sighted in the southeastern section of the cruise area, the bird flocks were concentrated in latitudes north and south of the islands along 154° W. and 157° W.

Other operations during the cruise included taking the usual series of bathythermograms, sea surface temperatures (including the use of a Hytech salinity-temperature-depth situ recorder on an experimental basis), release of drift bottles, and other oceanographic data.

Note: See Commercial Fisheries Review, May 1965 p. 15.

Federal Purchases of Fishery Products

DEFENSE DEPARTMENT'S NEW INSPECTION REQUIREMENTS FOR CHILLED AND FROZEN FISH:

New inspection requirements, effective July 6, 1965, for chilled or frozen fish purchased under Federal Specification PP-F-381 by the U. S. Department of Defense were announced in Headquarters Notice to the Trade No. 44 (65) of May 3, 1965, issued by the Defense Subsistence Supply Center (DSSC), Chicago, Ill.

The new inspection requirements are contained in DSSC Articles 345 of July 6, 1965 (which replace DSSC Articles 345 of January 4, 1965), and will be cited in DSSC contracts for chilled or frozen fish awarded on and after July 6, 1965.

Copies of the revised inspection requirements may be obtained from regional offices of the Defense Subsistence Supply Center.

Note: See Commercial Fisheries Review, Feb. 1965 p. 41.

Fish Species Identification

NEW AND QUICK METHOD DEVELOPED FOR SPECIES IDENTIFICATION OF PROCESSED PRODUCTS:

A new and simple, but precise, method for identifying the species of processed fish has been developed by the U. S. Bureau of Commercial Fisheries Technological Laboratory, Gloucester, Mass. The species of fish can be positively identified in less than an hour by this new method of identification. It is considered a major improvement over other species identification methods which require more time and more highly trained personnel.

The new technique developed by the Bureau's Gloucester Technological Laboratory uses cellulose polyacetate strip electrophoresis to separate the soluble protein of fish muscle into patterns thereby establishing a distinctive fingerprint for each species of fish. The method can be applied under field

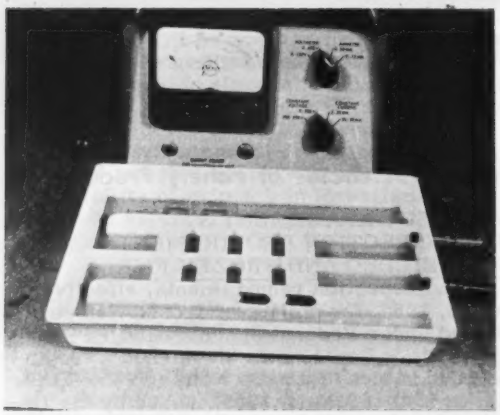


Fig. 1 - Equipment used in new quick method of identifying species of processed fish.

conditions by anyone without special training in laboratory techniques. This testing method will be an invaluable tool to processors and buyers in positively identifying fish used in preparing processed fishery products such as fish sticks, fish portions, and other processed fishery products.

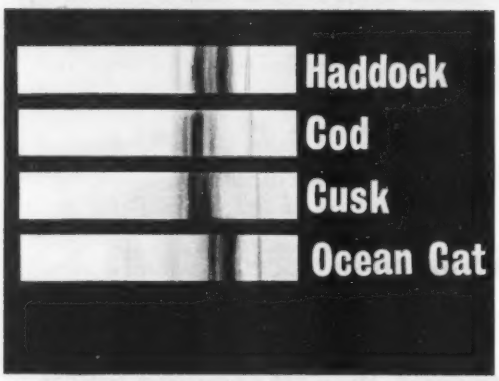


Fig. 2 - Shows identifying species patterns obtained by new method of identifying species of processed fish.

Members of the fishery and related industries were invited to attend a meeting June 4, 1965, at the Bureau's Gloucester Technological Laboratory to observe demonstrations of this new procedure.

Great Lakes Fisheries Explorations and Gear Development

SEASONAL DISTRIBUTION AND ABUNDANCE STUDIES OF ALEWIFE, CHUB, AND YELLOW PERCH IN LAKE MICHIGAN:

M/V "Kaho" Cruise 24 (April 13-28, 1965): This 15-day cruise was the first this year in a continuing series to extend knowledge on the seasonal distribution and abundance of alewife and chub stocks in Lake Michigan and Green Bay and their availability to bottom trawls. Other objectives of the cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Kaho were to: (1) collect growth data on chub, alewife, and yellow perch for biological investigations; (2) collect fish and bottom samples for botulism studies; and (3) obtain sculpin samples for technological analyses. The cruise plan was altered with fishing effort shifted to a station in the southern portion of the lake because of ice conditions in northern waters.

Fig. 1 - A 1,500-pound lift of alewife by a Lake Michigan trawl vessel.

Commercially significant quantities of alewife were caught only off Port Washington, Wis. Catches of alewife were extremely light at all depths off Ludington, Mich., and Manitowoc, Wis. Alewife were absent from all trawl catches made in Green Bay and virtually absent in the open lake off Sturgeon Bay. Chub catches were generally light in all areas fished. Only a small amount of yellow perch was taken--one individual in the open lake and a total of 56 pounds in Green Bay.

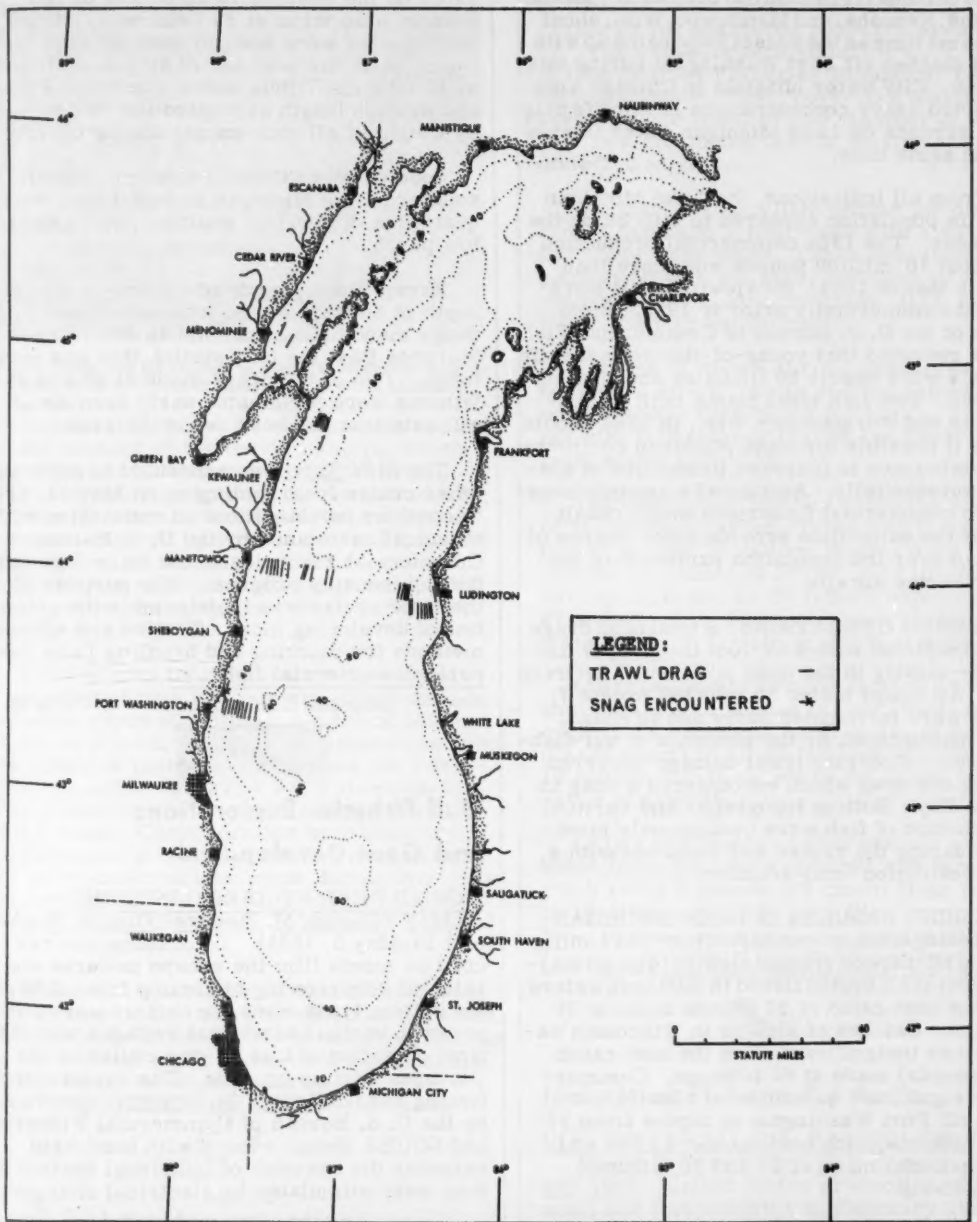


Fig. 2 - Lake Michigan and Green Bay explorations by M/V Kaho Cruise 24 (April 13-28, 1965).

LAKE MICHIGAN COMMERCIAL ALEWIFE PRODUCTION SUMMARY: Lake Michigan alewife were not as readily available to commercial trawlers early in 1965 as in 1964 when ice and storm conditions were much less severe. Commercial trawlers started making

large catches off Benton Harbor, Mich., and off Racine, Kenosha, and Manitowoc, Wis., about the same time as the vessel Kaho came up with good catches off Port Washington during this cruise. City water officials in Chicago also reported heavy concentrations of alewife plugging screens on Lake Michigan water intakes at the same time.

From all indications, the Lake Michigan alewife population appeared to still be on the increase. The 1964 commercial production of about 10 million pounds was more than double that of 1963. No alewife at all were caught commercially prior to 1956. Biologists of the U. S. Bureau of Commercial Fisheries reported that young-of-the-year alewife in 1964 were nearly 50 times as abundant as in 1962. Two fish meal plants built in Milwaukee and Sturgeon Bay, Wis., in 1964 should make it possible for Lake Michigan commercial fishermen to increase production of alewife substantially. Additional economic benefits to commercial fishermen would result and at the same time provide some degree of control over the population explosion of the troublesome alewife.

FISHING OPERATIONS: A total of 52 drags was completed with a 52-foot (headrope) fish trawl--mostly in the open lake, and 7 in Green Bay. All drags lasted 30 minutes except 7, which were terminated early due to snags, gear malfunction, or the presence of set-fishing gear. Moderate trawl damage occurred during one drag which encountered a snag in Green Bay. Bottom topography and vertical distribution of fish were continuously monitored during the cruise and recorded with a high-resolution echo-sounder.

FISHING RESULTS IN LAKE MICHIGAN: The fishing transect conducted between Ludington and Manitowoc showed alewife to be virtually absent at all depths fished in Michigan waters, with the best catch of 20 pounds taken at 70 fathoms. Catches of alewife in Wisconsin waters were insignificant, with the best catch (220 pounds) made at 60 fathoms. Commercially significant quantities of alewife were taken off Port Washington at depths from 20 to 45 fathoms, with best catches (1,600 and 1,700 pounds) made at 25 and 30 fathoms, respectively.

Chub catches were light at all depths fished during the lake-wide transect, with the best catch on the east shore amounting to 126 pounds taken at 35 fathoms. The best chub catch on the west shore amounted to 180 pounds, also taken at 35 fathoms. Catches of that species were insignificant off Port Washington, with the best one of 80 pounds taken at 40 fathoms. Chub which measured 9 inches and over in length accounted for 38 percent by weight of all chub caught during the cruise.

Species other than alewife and chub in southern Lake Michigan included very small quantities of herring, sculpin, smelt, and yellow perch.

Except for 3 pounds of alewife caught at a depth of 40 fathoms, no fish were taken in 7 drags made between 15 and 45 fathoms off Sturgeon Bay, the only station that was monitored. Two of the drags made at 40 and 45 fathoms were terminated early because of gill nets that had been set in the area.

The M/V Kaho was scheduled to start another cruise from Ludington on May 11, 1965, to continue investigations in connection with technical assistance by the U. S. Bureau of Commercial Fisheries to the Lake Superior fishing industry program. The purpose of the later cruise was to determine the potential of developing more effective and efficient methods for catching and handling Lake Superior commercial fish.

Note: See Commercial Fisheries Review, January 1965 p. 30.

Gulf Fisheries Explorations and Gear Development

SHRIMP GEAR STUDIES CONTINUED:

M/V "George M. Bowers" Cruise 59 (April 19-May 5, 1965): To observe and record on movie film the escape patterns and rates of deburrowing of shrimp from different bottom types when the shrimp were exposed to various electrical voltages was the first objective of this 16-day cruise to the Tortugas shrimp grounds. The exploratory fishing vessel George M. Bowers, operated by the U. S. Bureau of Commercial Fisheries, had SCUBA divers record with hand-held cameras the reaction of individual shrimp as they were stimulated by electrical charges.

The second objective of the cruise was to determine and record on movie film the behavior pattern of shrimp when stimulated by the electrodes of the electrified shrimp trawl.

Experimenting with the response of shrimp to electricity in an aquarium at U. S. Bureau of Commercial Fisheries Laboratory.

To accomplish this a TV camera was mounted on the housing of the movie camera, which was secured to the headrope of the trawl. When shrimp appeared on the screen of the TV monitor aboard the vessel, the movie camera was actuated by remote control from the vessel, and the action was thus recorded. Bad weather caused turbid water conditions and restricted to a degree the underwater photographic work.

Preliminary information on the rate of deburrowing of pink shrimp was obtained on two different types of bottom. A total of 500 feet of colored motion-picture sequences recorded the behavior pattern and the time for individual shrimp to deburrow when stimulated with pulsating d. c. current ranging from 0.8 to 6.0 volts. Corroboration by laboratory experiments in February 1965 and underwater diver observations made during this cruise indicate that shrimp deburrow faster when stimulated with high voltages as opposed to low voltages.

Black and white movies also taken during this cruise on the trawl-mounted camera will provide information on the behavior of shrimp in the vicinity of the electrodes and footrope of the electrical shrimp trawl.

Note: See Commercial Fisheries Review, May 1965 p. 21.

Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-28 (April 15-22, 1965): Good catches of large brown shrimp (15-20 count) were made in several of the statistical areas worked during this cruise by the chartered research vessel Gus III. The vessel, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Galveston, Tex., covered 8 statistical areas on this April cruise, another of a series in a continuing Gulf of Mexico shrimp distribution study.

Weather was excellent during the cruise and 28 standard 3-hour tows with a 45-foot flat trawl were made. Other operations in connection with the study included 50 plankton tows, 52 bathythermograph (BT), and 157 water (Nansen bottle) casts.

Catches of brown shrimp predominated in nearly all areas. White shrimp catches were mostly spotty throughout the survey area, but with fair catches (15-20 and 26-30 count) from areas 13 and 16.

The best brown shrimp catch (54 pounds of 15-20 count) of the cruise was in area 14 from the over 21-fathom depth. Area 19 yielded 33 pounds of 26-30 count brown shrimp from the 11-20 fathom depth range; 27 pounds of 15-20 count brown shrimp came from the over 21-fathom depth of area 16.

Other moderate to good catches of brown shrimp were 18 pounds (21-25 count) in the over 21-fathom depth of area 21; 15 pounds (26-30 count) in 11-20 fathoms of area 20; 12 pounds (21-25 count) in the 11-20 fathom range of area 18.

Only a scattering of pink shrimp were taken from the areas covered, the largest catch being 6 pounds (68 count) from the up to 10-fathom depth in area 21.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, June 1965 p. 25.

Industrial Fishery Products

U. S. FISH MEAL, OIL, AND SOLUBLES: Major Indicators for U. S. Supply, February 1965: United States production of fish meal and fish solubles in February 1965 was lower by 2.4 and 11.4 percent, respectively, as compared with February 1964. Production of fish oil was up by 108.7 percent.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, February 1965					
Item and Period	1/1965	1964	1963	1962	1961
	(Short Tons)				
Fish Meal:					
Production:					
January	2,770	2,092	2,335	2,941	2,723
February	2,257	2,313	2,897	3,616	2,071
Jan.-Feb. 2/	5,027	4,405	5,232	6,557	4,794
Year 3/	-	235,252	255,907	312,259	311,265
Imports:					
January	16,033	30,975	18,495	25,427	9,531
February	25,480	35,309	40,086	18,819	14,344
Jan.-Feb.	41,513	66,284	58,581	44,246	23,875
Year	-	439,143	376,321	252,307	217,845
Fish Solubles 4/:					
Production:					
January	907	1,501	1,662	1,808	1,620
February	803	906	1,465	1,726	1,650
Jan.-Feb. 2/	1,710	2,407	3,127	3,534	3,270
Year 3/	-	93,296	107,402	124,649	112,254
Imports:					
January	650	358	148	273	219
February	1,665	524	169	2,249	155
Jan.-Feb.	2,315	882	317	2,522	374
Year	-	4,505	7,112	6,308	6,739
	(1,000 Lbs.)				
Fish Oils:					
Production:					
January	573	526	491	769	473
February	478	229	358	408	356
Jan.-Feb. 2/	1,051	755	849	1,177	829
Year 3/	-	180,198	185,827	250,075	258,118
Exports:					
January	-	165	79	509	13,449
February	-	23,533	2,458	21,647	17,456
Jan.-Feb.	-	23,698	2,537	22,156	30,905
Year	-	151,469	262,342	123,050	122,486

1/Preliminary.
2/Data for 1965 based on reports which accounted for the following percentage of production in 1964: Fish meal, 89 percent; solubles, 89 percent; and fish oils, 99 percent.
3/Small amounts (10,000 to 25,000 tons) of shellfish and marine animal meal and scrap not reported monthly are included in annual totals.
4/No homogenized fish was produced in 1964.

* * * * *

Production by Areas April 1965: Preliminary data on U.S. production of fish meal, oil, and solubles for April 1965 as collected by the U.S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U.S. Production 1/ of Fish Meal, Oil, and Solubles, April 1965 (Preliminary) with Comparisons			
Area	Meal	Oil	Solubles
	Short Tons	1,000 Pounds	Short Tons
April 1965:			
East & Gulf Coasts	9,184	10,009	3,004
West Coast 2/	1,705	230	1,142
Total	10,889	10,239	4,146
Jan.-Apr. 1965 Total	18,674	11,832	6,944
Jan.-Apr. 1964 Total	15,651	5,824	7,293

1/Does not include crab meal, shrimp meal, and liver oils.
2/Includes American Samoa and Puerto Rico.

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Production, February 1965: During February 1965, a total of 478,000 pounds of marine animal oils and 2,257 tons of fish meal was produced in the United States. Compared with February 1964 this was an increase of 249,000 pounds of marine-animal oils but a decrease of 56 tons of fish meal and scrap. Fish solubles production amounted to 803 tons--a decrease of 103 tons as compared with February 1964.

U. S. Production of Fish Meal, Oil, and Solubles, February 1965 1/ with Comparisons					
Product	Feb.		Jan.-Feb.		Total
	1/1965	1964	1/1965	1964	1964
	(Short Tons)				
Fish Meal and Scrap:					
Herring	298	156	542	415	8,881
Menhaden 2/	-	-	3/	130	160,349
Tuna and mackerel	1,635	1,486	3,549	2,125	21,113
Unclassified	324	671	936	1,735	34,809
Total	2,257	2,313	5,027	4,405	225,152
Shellfish, marine-animal meal and scrap	4/	4/	4/	4/	10,100
Grand total meal and scrap	4/	4/	4/	4/	235,252
Fish solubles:					
Menhaden	-	-	-	60	68,738
Other	803	906	1,710	2,347	24,558
Total	803	906	1,710	2,407	93,296
	(1,000 Pounds)				
Oil, body:					
Herring	124	8	287	132	10,354
Menhaden	-	-	2/	63	157,730
Tuna and mackerel	254	112	490	339	4,816
Other (including whale)	100	109	274	221	7,298
Total oil	478	229	1,051	755	180,198

1/Preliminary data.
2/Includes a small quantity of thread herring.
3/Included in "unclassified."
4/Not available on a monthly basis.

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U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January-February 1965: Based on domestic production and imports, the United States available supply of fish meal for the first 2 months in 1965 amounted to 46,540 short tons--24,149 tons (or 34.2 percent) less than during the same period in 1964. Domestic production was 622 tons (or 14.1 percent) more but imports were 24,771 tons (or 37.4 percent) lower than in January-February 1964. Peru continued to lead other countries with shipments of 32,512 tons.

The United States supply of fish solubles during January-February 1965 amounted to 4,025 tons--an increase of 22.4 percent as compared with the same period in 1964. Domestic production dropped 29.0 percent, but imports of fish solubles increased 162.5 percent.

U.S. Supply of Fish Meal and Solubles, January-February 1965

Item	January		Jan.-Feb.		Total
	1/1965	1964	1965	1964	1964
	(Short Tons)				
Fish Meal and Scrap:					
Domestic production:					
Menhaden	2/	130	2/	130	160,349
Tuna and mackerel	1,914	639	3,549	2,125	21,113
Herring, Alaska	244	259	542	415	8,881
Other	612	1,064	936	1,735	44,909
Total production	2,770	2,092	5,027	4,405	235,252
Imports:					
Canada	2,408	4,150	6,046	7,803	54,769
Peru	11,933	25,090	32,512	55,222	348,025
Chile	1,102	-	2,080	1,051	12,942
So. Africa Rep.	-	1,528	200	1,678	18,581
Other countries	590	207	675	530	4,826
Total imports	16,033	30,975	41,513	66,284	439,143
Available fish meal supply	18,803	33,067	46,540	70,689	674,395
Fish Solubles:					
Domestic production 3/	907	1,501	1,710	2,407	93,296
Imports:					
Canada	100	85	249	345	1,553
So. Africa Rep.	-	109	-	339	987
Other countries	550	164	2,066	198	1,965
Total imports	650	358	2,315	882	4,505
Available fish solubles supply	1,557	1,859	4,025	3,289	97,801

1/Preliminary.
2/Included with "other."
3/50-percent solids.

Maine Sardines

CANNED STOCKS, APRIL 1, 1965:

On April 1, 1965--just before the new packing season opened--canners' stocks of Maine sardines were down sharply from those of the same date in 1964 and 1963.

Final data show the 1964 pack as 865,751 standard cases (100 cans of 3¾-oz.) canned in 23 plants in Maine. (Partially included is a small winter 1964/65 pack from Canadian fish of 40,000 cases.) That was much less than the 1,619,000 cases packed during 1963, but more than the 754,000 cases packed during the regular season in 1961 when fishing was extremely poor.

The new Maine sardine canning season opened on the traditional date of April 15, 1965. But in the light of past experience, volume production was not expected until late May or early June. With carryover stocks at a low level, a pack of 1.5 to 1.6 million cases has been predicted for 1965.

The new law legalizing year-round canning of Maine sardines will remove the traditional December 1 closing date for the packing season. The new legislation will open winter canning to all Maine sardine packers and will allow winter canning with domestic as well as imported herring.

Note: See Commercial Fisheries Review, April 1965 p. 23.

Marketing

EDIBLE FISHERY PRODUCTS, 1964 AND FIRST HALF OF 1965:

Total supplies in the United States of edible fishery products in 1964 dropped only fractionally from the previous year's all-time high. U. S. imports of fish and shellfish again rose and provided nearly half the total available supplies for the year. The 1964 domestic fishery catch was below the previous year.

Supplies of fishery products were sufficient during the year to maintain the U. S. per capita consumption of fish and shellfish at 10.6 pounds (edible weight). Per capita consumption of canned fishery products declined in 1964, offsetting an increase in consumption of fresh and frozen fishery products.

More salmon, blue and king crab, haddock, and yellowfin tuna were landed in 1964. But

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, April 1, 1965, with Comparisons 1/

Type	Unit	1964/65 Season			1963/64 Season					1962/63 Season			
		4/1/65	1/1/65	11/1/64	7/1/64	6/1/64	4/1/64	1/1/64	11/1/63	7/1/63	6/1/63	4/1/63	1/1/63
Distributors	1,000 actual cases	236	238	291	234	254	291	261	308	217	215	264	271
Canners	1,000 std. cases 2/	314	538	629	514	499	658	1,063	1,255	643	536	699	1,092

1/Table represents marketing season from November 1-October 31.

2/100 3¾-oz. cans equal one standard case.

Note: Beginning with the Canned Food Report of April 1, 1963, U.S. Bureau of the Census estimates of distributors' stocks were based on a revised sample of merchant wholesalers and warehouses of retail multiunit organizations. The revised sample resulted in better coverage. The January 1, 1963, survey was conducted with both samples to provide an approximate measure of the difference in the two samples. That survey showed that the estimate of distributors' stocks of canned Maine sardines from the revised sample was 13 percent above that given by the old sample.

Source: U.S. Bureau of the Census, Canned Food Report, April 1, 1965.

catches of other species were significantly lower than the previous year, including Atlantic herring (sardines), shrimp, ocean perch, West Coast mackerel, albacore, bluefin, and skipjack tuna, and North Pacific halibut.

Frozen stocks of fishery products on hand at the beginning of the second quarter 1965 were down more than a tenth from a year earlier. Cold-storage holdings of cod, haddock, and ocean perch fillets were substantially lower. Stocks of fish sticks and portions, halibut, whiting, shrimp, and spiny lobster tails were below those for the same period a year earlier. Crab and crab meat (mostly king crab) were among several frozen items held in larger quantity than in 1964.

Although fishing effort is this year increasing seasonally, supplies will likely continue limited during the second quarter 1965 and prices will average higher than a year earlier. Nearly half of the domestic catch of edible fish will be landed during June-September, with the peak reached in July and August. As a result, stocks of many popular frozen fishery products will not be replenished until then.

Present market conditions point to increased imports of edible fishery products this year, particularly shellfish products and groundfish (cod, haddock, etc.) blocks for producing fish sticks and portions. The United States continues to be the world's largest importer of fishery products even though unused resources with a potential, perhaps as much as five times the present catch, are available in waters usually fished by United States fishermen.

Note: This analysis was prepared by the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the Department of Agriculture's May 1965 issue of the National Food Situation (NFS-112).

Mussels

TENNESSEE RIVER HARVEST DECLINE RELATED TO OVERFISHING:

Overharvesting has played a definite part in the decline of Tennessee River mussel beds. That was announced in a progress report issued in early May 1965 on a Tennessee Valley Authority (TVA) study of the problem begun in 1963.

A mussel takes at least 10 years to grow a marketable shell, and TVA biologists estimate the mussel boats have been taking shells from the Tennessee about 20 times as fast as they were being replaced by natural growth. The 1964 mussel harvest on the river dropped to a record low of only 2,100 tons valued at about $294,000. In previous years the harvest had often been above 10,000 tons, valued at up to $1.3 million.

The growing demand from the Japanese cultured pearl industry, which uses bits cut from the mussel shells as cores for pearls, has brought high prices in recent years, and this has encouraged heavier mussel fishing. The States are moving to meet the problem with limits on harvesting. Tennessee already has passed a licensing and control law, and Alabama and Kentucky agencies are considering similar regulations.

TVA biologists using a sampling dredge and SCUBA diving equipment examined over 500 miles of Tennessee River bed, from Watts Bar Dam in east Tennessee to the river's mouth. The examinations showed that in most cases areas which formerly were productive mussel beds now have only a fraction of the mussels there in past years.

Little evidence has been found to indicate water pollution or disease as causes of the decline, although the more valuable mussel species will not tolerate the thin film of silt that now covers much of the old river bottom.

The best Tennessee River mussel beds now are in areas downstream from the dams, where there is enough current to keep the river bottom clean. Over 175 miles of river channel is still good habitat for the preferred commercial mussel species, and overharvesting is considered the main cause of the population decline in those areas.

Copies of the progress report on the mussel study are available from TVA and from State conservation agencies. A detailed report will be published in January 1966. Meanwhile, a TVA biologist will continue some aspects of the study. More work will be done on the possible effects of changes in fish populations (a young mussel spends part of its life cycle as a parasite on certain fish), on water quality, and on possible disease or parasite infestation. (Tennessee Valley Authority, May 6, 1965.)

Note: See Commercial Fisheries Review, October 1963 p. 27.

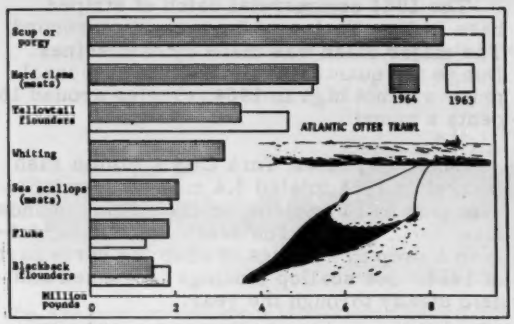
New York

FISHERY LANDINGS, 1964:

Total landings of fish and shellfish in the Marine District of New York during 1964, exclusive of unclassified fish for reduction, were 79.2 million pounds valued at $9.9 million ex-vessel. Compared with 1963, that was a decrease of 38 percent in quantity, but an increase of 7 percent in value. Lighter landings of menhaden, scup, and yellowtail and blackback flounders accounted for most of the decline in finfish landings. Shellfish, with the exception of oysters, showed an increase, with total landings up 11 percent in quantity and 19 percent in value. In terms of total value, shellfish ($6.8 million) exceeded the value of all finfish by $3.8 million.

The 1964 catch of menhaden was down 54 percent from 1963. The menhaden fishery was at its lowest ebb in many years. The industrial fishery for species other than menhaden has developed into a large-scale operation, compensating in part for the short supply of menhaden.

Lighter landings of scup or porgy (down nearly 1 million pounds from 1963) were the result of reduced catches by otter trawls. Because of the short supply, prices remained high and the total ex-vessel value of the species in 1964 was equal to that of the previous year.



New York State marine catch of certain fish and shellfish, 1964 and 1963.

The pound-net fisheries showed improvement only in the catch of scup. It was generally a poor season. The fishing effort in Raritan Bay has declined steadily due to poor fishing and is expected to decrease further.

New York Marine Landings, 1964 and 1963

Species	1964		1963 1/	
Fish:	Pounds	Value	Pounds	Value
Bluefish	675,115	109,426	696,750	102,295
Butterfish	1,066,655	126,161	1,151,041	147,966
Cod	516,500	72,220	882,200	137,659
Flounders: Gray sole	14,620	2,072	9,200	1,140
Blackback	1,440,640	74,031	1,842,525	98,483
Yellowtail	3,561,810	233,403	4,668,675	287,940
Fluke	1,853,780	445,448	1,305,865	368,564
Unclassified	900	45	400	16
Menhaden	42,424,700	516,226	91,650,540	1,013,680
Scup or porgy	8,343,820	783,648	9,807,715	783,613
Sea bass	500,740	95,821	576,360	108,664
Striped bass	965,500	138,439	626,100	94,061
Whiting	3,123,200	159,323	2,367,660	111,415
Unclassified fish	3,198,340	260,785	3,193,670	244,349
Total Fish	67,686,320	3,017,048	118,285,651	3,499,845
Shellfish:				
Lobsters, Northern	546,715	305,747	380,055	210,204
Clams: Hard	5,402,292	4,135,545	5,311,032	3,581,797
Razor	5,856	1,464	8,432	2,257
Soft	180,832	55,677	98,592	27,527
Surf	1,217,676	108,852	974,304	90,524
Conchs	40,950	7,989	22,320	4,797
Mussels, Sea	124,950	16,512	74,340	10,604
Oysters	213,468	315,037	394,468	572,688
Scallops: Bay	687,096	731,474	302,374	291,676
Sea	2,044,332	1,114,682	1,924,371	894,620
Squid	1,007,130	74,008	872,120	67,825
Total Shellfish	11,471,297	6,866,987	10,362,408	5,754,519
Grand Total	79,157,617	9,884,035	128,648,059	9,254,364

1/Revised. In addition to the catch in the Marine District there was a catch, principally shad, in the Hudson River District in 1963 totaling 250,000 pounds valued at $27,000.

Note: Does not include the catch of unclassified fish for reduction. Univalve and bivalve mollusks are reported in pounds of meats. All other species are shown in round weight.

The 1964 commercial catch of striped bass in New York was the largest on record. The major catch was made by haul seines. Due to the quantity available, the ex-vessel price was not high in 1964, ranging around 15 cents a pound.

Landings at New York City's Fulton Fish Market in 1964 totaled 6.4 million pounds, a decrease of 16 percent, or 1.2 million pounds less than in 1963. The decline was due chiefly to a drop in landings of scup the early part of 1964. Sea scallop landings increased and held steady through the year.

Hard clam production increased slightly in quantity and 15 percent in value as compared with 1963. There was an increase in the catch by dredges and a decline in the catch by other gear. Oyster production continued to decline with prospects for immediate improvement doubtful. In-the-shell oysters for the half-shell trade sold at very high prices, ranging from $11-$15 a bushel. The bay scallop harvest came back strong after a very poor start.

* * * * *

NEW SITE FOR WHOLESALE NEW YORK CITY FISH MARKET APPROVED:

The Site Selection Board of New York City on April 26, 1965, gave its unanimous approval to the City's acquisition of 100 acres of land in the Hunts Point section of the Bronx, contiguous to the 126-acre New York City Produce Terminal, for the establishment of a wholesale fish and a wholesale meat market. The combined produce, meat, and fish sections of that facility will form the world's largest perishable food distribution center.

The proposed fish and meat markets will be designed to house the fish dealers located in the existing Fulton Fish Market and the wholesale butchers in the present 14th Street, Brook Avenue and Harlem Meat Markets in modern quarters with truck loading platforms and direct rail connections. The new facility is planned to have 300-foot wide market streets to eliminate traffic congestion and will be provided with ample parking space. During the planning period, the consultants will work closely with the dealers to include all desirable features to make the new wholesale market facility the most efficient possible.

Gloucester trawler Manuel P. Domingos docked in New York City's Fulton Fish Market. In the background is the "Old Shed," the older of two sheds used to sell and handle the salt-water fish received by truck, rail, and steamship from all over the world.

Note: See Commercial Fisheries Review, November 1964 p. 40.

North Atlantic

SOVIET FISHING ACTIVITY OFF COAST, MAY 1965:

A total of 57 Soviet vessels was observed in the North Atlantic during the early part of May 1965 when an aerial reconnaissance flight was made to observe foreign fishing activity. The vessels sighted were identified

Fig. 1 - Soviet factoryship stern trawler of 300 feet, fishing the northern edge of Georges Bank in the North Atlantic.

Fig. 2 - In the foreground, a 500-ton Soviet side-fishing trawler operating in the Grand Banks area of the North Atlantic.

as 22 factoryship stern trawlers, 27 side trawlers, 7 refrigerated fish transports, and 1 tug. Fishing operations were widely scattered over a 100-mile area from south of Nantucket Island to the southwest part of Georges Bank (Oceanographer Canyon), with the heaviest vessel concentration at the latter position.

Soviet vessels fishing areas south and southeast of Nantucket Island about early May were taking substantial quantities of red hake and lesser amounts of whiting. The main group of vessels on Georges Bank were catching herring mostly, and some whiting. Reduction plants on several of the stern trawlers were in operation.

Fig. 3 - Majakovskij class Soviet factoryship stern trawler in the North Atlantic. Equipped to freeze, can, and process fish meal and oil.

During a reconnaissance flight about mid-month, 19 Soviet vessels were sighted--4 factoryship stern trawlers, 11 side trawlers, 3 refrigerated transports, and 1 tanker. The area covered started south of Nantucket Island and included the area between Atlantis Canyon and Corsair Canyon along the 100-

Fig. 4 - A Soviet combination-type 145-foot vessel capable of drift gill-net fishing or trawling. Herring catches are salted in barrels and later transferred to a mothership.

fathom contour. Vessels were fishing and catches appeared to be spotty, consisting mostly of herring.

On another flight toward the end of the month, 20 Soviet vessels were spotted and identified as 16 side trawlers, 1 factoryship stern trawler, and 3 support vessels. None was fishing. Most of them appeared to be either transferring or waiting to transfer their catches. This flight covered the Continental Shelf area northeastward a distance of 90 miles, and the south and western portion of Georges Bank. Visibility was very poor because of fog.

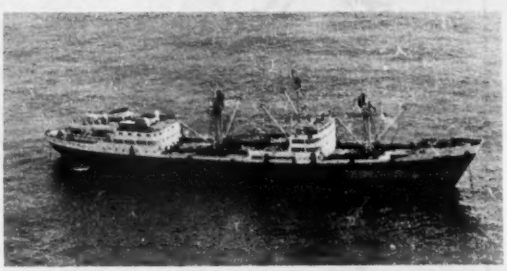


Fig. 5 - Refrigerated fish transport used by Soviets in North Atlantic fishery to transport fishing vessel catches to the U.S.S.R.

These observations were made by the staff of the Fisheries Resource Management Office, U. S. Bureau of Commercial Fisheries, Gloucester, Mass. Weekly reconnaissance flights are made in cooperation with the U. S. Coast Guard.

Note: See Commercial Fisheries Review, June 1965 p. 27.

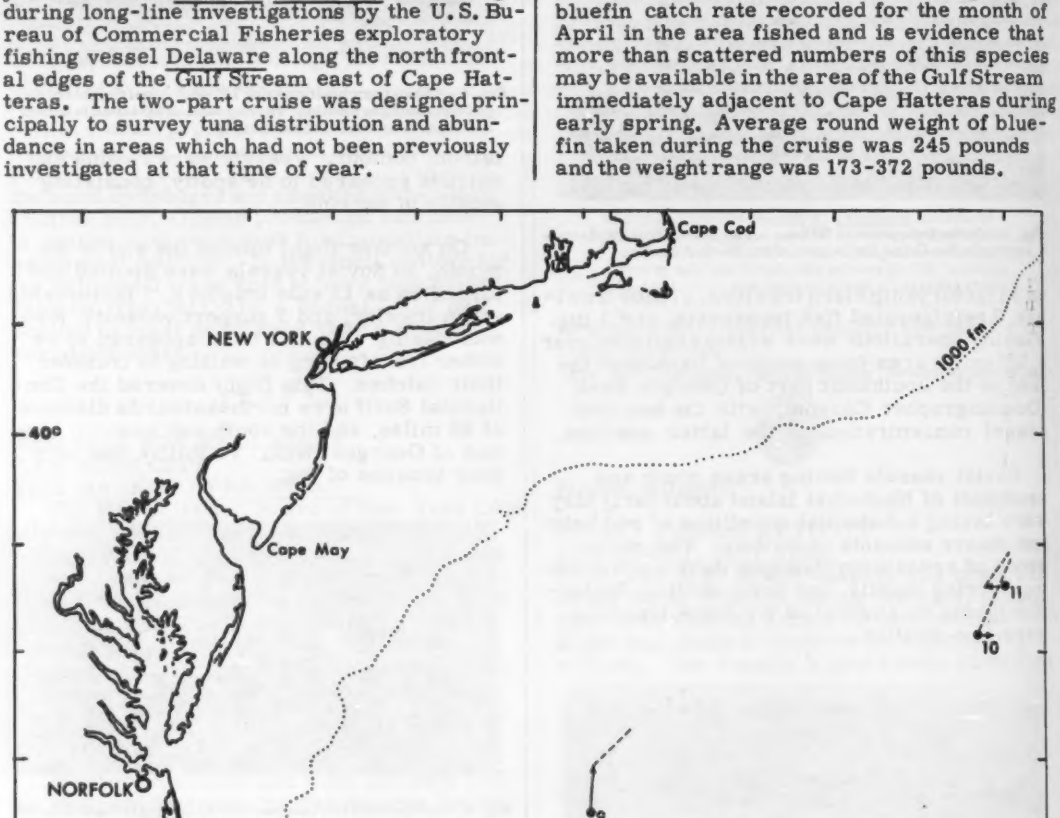
North Atlantic Fisheries Explorations and Gear Development

TUNA AND SWORDFISH DISTRIBUTION STUDIES IN WESTERN NORTH ATLANTIC CONTINUED:

M/V "Delaware" Cruise 65-3 (March 30-April 23, 1965): Bluefin (Thunnus thynnus) and yellowfin tuna (Thunnus albacares) were caught during long-line investigations by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware along the north frontal edges of the Gulf Stream east of Cape Hatteras. The two-part cruise was designed principally to survey tuna distribution and abundance in areas which had not been previously investigated at that time of year.

LONG-LINE SETS AND CATCH: Eight sets of long-line gear were made during daylight hours and one set was made at night, with a total of 4,400 hooks fished. Hooks baited with squid and herring were spaced at 20-fathom intervals and fished at depths below 15 fathoms.

Bluefin tuna were found at 5 stations with catch rates of 3.3 and 3.2 fish per 100 hooks at 2 of those stations. This is the highest bluefin catch rate recorded for the month of April in the area fished and is evidence that more than scattered numbers of this species may be available in the area of the Gulf Stream immediately adjacent to Cape Hatteras during early spring. Average round weight of bluefin taken during the cruise was 245 pounds and the weight range was 173-372 pounds.



Shows station pattern of M/V Delaware Cruise 65-3 (March 30-April 23, 1965). Drift of long-line sets is shown by dashed line.

Previous long-line catch data for yellowfin tuna in that region from late April through May indicated substantial concentrations (M/V Delaware cruises in April-May 1960 and April-June 1964) when up to 14 and 19 fish per 100 hooks were recorded. Special effort was made on this cruise to determine the availability of such abundances earlier in the month of April. Results of the survey suggest yellowfin were entering the area at that time. The species was taken at 5 stations, with the highest catch rate of 3.8 fish per 100 hooks at the station worked on April 15. The average round weight of yellowfin tuna on the cruise was 85 pounds and the weight range was 33-149 pounds.

Albacore tuna (Thunnus alalunga) were found in very small numbers at 5 stations, with the highest catch rate 1.0 fish per 100 hooks at one of those stations. The average round weight of albacore tuna was 45 pounds, and the weight range was 37-55 pounds. Two skipjack (Euthynnus pelamis) tuna weighing 34 and 15 pounds were taken, 1 at each of 2 stations worked. They were the first skipjack taken earlier than May north of Cape Hatteras. A single bigeyed tuna (Thunnus obesus), estimated weight 100 pounds, was taken at one station, and a single swordfish (Xiphias gladius) of 158 pounds was caught at the only night long-line station worked.

Other incidental long-line catches during the cruise were: 1 longbill spearfish (Tetrapturus pfluegeri), 1 blue marlin (Makaira nigricans), 6 white marlin (Tetrapturus albidus), 3 wahoo (Acanthocybium solanderi), and 1 sharp-tailed mola (Mola lanceolatus).

ENVIRONMENTAL DATA VS. TUNA AVAILABILITY: General areas containing desirable environmental conditions for tuna availability were through analysis of sea surface temperature isotherm charts received by radiofacsimile equipment aboard the vessel. Specific locations for long-line sets were determined on the basis of supplementary surface and vertical (subsurface) temperature profile data obtained within the general area. All sets were positioned in relation to cold/warm water interfaces (steep horizontal thermal gradients) associated with the frontal edges of the Gulf Stream.

A total of 7 sets as made toward or across the interfaces to determine tuna availability within the general temperature gradient structure. Results at those stations indicated that tuna were associated with the mixed surface layer on the warmer side of the interfaces. Two sets at 2 separate stations were positioned, based on information from the other sets, in the warmer water and about parallel to the interface. Those 2 sets not only yielded the highest tuna catches of the cruise, but their comparative catch composition indicated displacement of bluefin concentrations by yellowfin concentrations over a one-week period (April 8-15).

MODIFICATIONS TO LONG-LINE DECK GEAR: Several modifications to long-line gear-handling equipment on the deck of the vessel were indicated during an earlier cruise of the Delaware in October-November 1964. For this cruise in April 1965, a redesigned long-line reel was constructed with a heavier frame, a larger core with increased length, a heavier automatic levelwind, an auxiliary hydraulic control near the reel, and an automatic braking device. After minor adjustments and a normal break-in period, the system functioned smoothly. An improved branchline tub, designed to reduce snarls and ease branchline handling during setout, was given initial trials. Further separation of branchline coils and baited hooks in the tubs was indicated.

OTHER ACCOMPLISHMENTS AND OBSERVATIONS: With few exceptions, all viable tuna, marlin, and shark caught on long-line gear were marked with dart-type tags and released. In cooperation with the tagging program of the Woods Hole Oceanographic Institution, Woods Hole, Mass., 28 bluefin tuna, 16 yellowfin, 1 albacore, 1 big-eyed, and 2 white marlin were released. A total of 51 shark of assorted species was released for the Shark Research Panel of the American Institute of Biological Sciences. Stomachs and gonads from 40 tuna were frozen for analysis at the Bureau's Biological Laboratory, Washington, D. C. Night light-dip net collections were made at 2 stations and a single unproductive trolling transect at the end of one station was made when what appeared to be yellowfin tuna were observed breaking the surface. Five plankton tows were made, 3 during haulback of long-line sets, with an experimental surface net from the Woods Hole Oceanographic Institution which samples the top ten centimeters at the surface. Included in the catches were 3 larval swordfish taken at 3 stations.

Note: See Commercial Fisheries Review, February 1965 p. 31.

North Atlantic Fisheries Investigations

WINTER DISTRIBUTION AND ABUNDANCE OF GROUNDFISH SPECIES STUDIED:

M/V "Albatross IV" Cruise 65-2; Part I (February 1-15, 1965), Part II (February 26-March 2): To determine the winter distribution and relative abundance of groundfish species from the Bay of Fundy southward to Hudson Canyon was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. All survey stations were not occupied as planned because of difficulties encountered, but those from the Bay of Fundy southward (including Browns Bank) to the Northern Edge of Georges Bank were surveyed. The remaining stations were surveyed on a later cruise.

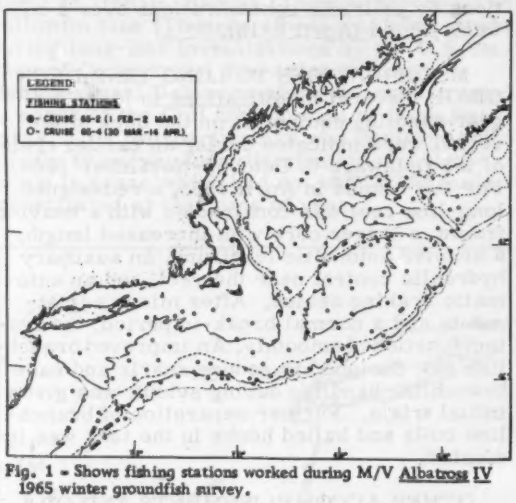


Fig. 1 - Shows fishing stations worked during M/V Albatross IV 1965 winter groundfish survey.

Fig. 2 - Fishing deck of M/V Albatross IV showing otter trawl and doors.

Ocean perch were caught in the deep waters off Cape Cod and at several locations in the Gulf of Maine; haddock were caught around Nova Scotia and on Georges Bank. A large catch of good marketable sizes of blackback flounder was taken off St. Mary's Bay, Nova Scotia. Moderate quantities of cod were caught on Stellwagen Bank and in the South Channel, and spiny dogfish were taken in the deep water off the Northern Edge of Georges Bank.

All fish caught during the cruise were identified and measured and the total weight by species was obtained for each tow. Stomach contents from a variety of species were examined and recorded, and scale samples were taken from yellowtail flounder and haddock. Otoliths were obtained from silver hake and white hake. A sample of the bottom type was obtained at each station. Invertebrates caught in each tow were preserved for study.

* * * * *

M/V "Albatross IV" Cruise 65-4, Part I (March 30-April 8, 1965); Part II (April 8-14): The first phase of this cruise, which was conducted in two parts, was partly a continuation of the Bureau's research vessel Albatross IV Cruise 65-2 to survey the area from Hudson Canyon to the Northern Edge of Georges Bank.

Relatively few fish were caught on the southern part from Hudson Canyon to Georges Bank during the first phase of this cruise. One large catch of dogfish (12,000 pounds) was made in 88 fathoms off southern New England. On the western side of Nantucket, over 800 pounds of ocean pout were caught in shoal water, and on Georges Bank several good catches of haddock were made in the shoal water.

All fish caught on this cruise were identified and measured. The total weight by species was obtained for each tow, and stomach contents from a variety of species were examined and recorded. Scale samples were taken from yellowtail flounder and haddock. Otoliths were extracted from silver hake, red hake, and white hake. A sample of the bottom type was obtained at each station. Invertebrates caught in each tow were preserved for study and samples of sea herring were collected for laboratory studies.

During the cruise tows were made at several depths with the Isaac--Kidd midwater

trawl in an area about 160 fathoms deep off the Northern Edge of Georges Bank. The gear was towed at 5 knots and probably did not exceed 70 fathoms in depth. Adult whiting (silver hake) and shrimp were caught in each tow.

Part II of this cruise was a continuation of an earlier special sampling cruise in January 1965, designed to determine effect of tow duration, speed, and distance trawled on size and variability of catches. Trawling was conducted in the same area (southeast part of Georges Bank) as previously, using the same 3-stage sample design, and the same gear (No. 36 trawl with liner in cod end--the "standard" census trawl).

Five stations were completed with 10 tows at each station (2 tows each lasting $7\frac{1}{2}$, 15, 30, 60, and 120 minutes). The catch (or aliquot sample) of each species was weighed and measured for each tow. Bathythermograph (BT) casts were made while steaming, and about every 6 hours while on station.

During this part of the cruise an odometer was attached to the foot rope of the trawl as on the January cruise, and number of turns recorded after each tow. At 2 stations and for a few tows at 2 other stations, a buoy with radar reflectors was anchored. Speed and distance trawled were determined by recording bearings and ranges of buoy during individual tows. Rough seas prevented extensive use of the buoys and 1 buoy was lost.

Out of 71 mature female haddock taken on the cruise and examined, 26 percent were not yet ripe, 30 percent were ripe or partly spent, and 44 percent were spent. It was believed that spawning may have been somewhat later than normal this year.

Note: See Commercial Fisheries Review, May 1965 p. 26; March 1965 p. 44.

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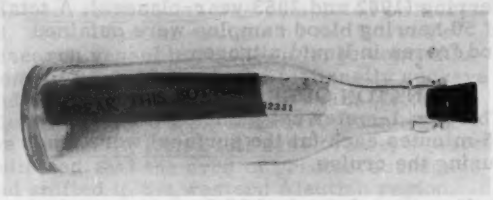
CONTINENTAL SHELF WATERS SURVEYED: M/V "Albatross IV" Cruise 65-3 (March 9-22, 1965): To conduct an environmental survey of Continental Shelf waters in an area bounded by longitudes 63° W. and 73° W. was the purpose of this cruise by the research vessel Albatross IV. The survey included the collection of data on the vertical and horizontal distribution of temperature, salinity, oxygen, and chlorophyll.

A total of 87 hydrographic stations was occupied throughout the survey area and 157 bathythermograph (BT) lowerings were made



Type of drift bottle released at hydrographic stations.

to determine temperatures. Water samples were obtained at 11 different depths ranging from 1 to 250 meters (3.3 to 820 feet) to determine salinity, oxygen, and chlorophyll. During the cruise, 6 sea-bed drifters and 6 drift bottles were released at alternative hydrographic stations.

Note: See Commercial Fisheries Review, February 1965 p. 35.

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LOBSTER AND SEA HERRING POPULATIONS AND LARVAE STUDIED: M/V "Albatross IV" Cruise 65-5 (April 21-30, 1965): Lobster and herring investigations were conducted during this cruise in the North Atlantic Ocean (general area of Georges Bank) by the research vessel Albatross IV. The objectives were to: (1) sample populations of lobsters and sea herring and obtain related environmental data, (2) obtain lobster and sea herring blood samples, and (3) make plankton tows for lobster and herring larvae.

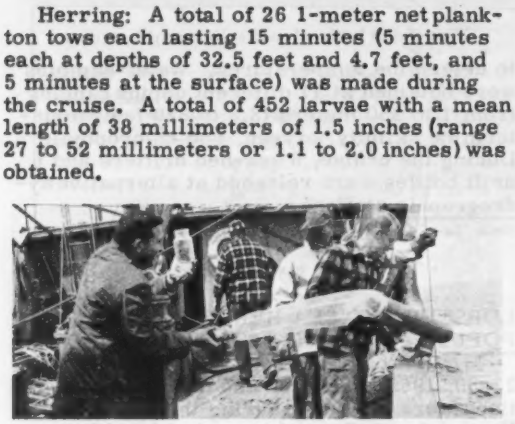
FISHING OPERATIONS: Lobster: A total of 24 trawl sets was made at the 10 lobster stations worked during this cruise. The sets made in waters ranging in depth from 58 to 170 fathoms yielded 272 lobsters, 140 females and 132 males. Thirty-two of the females were berried. Only one of all the lobsters caught (a female) was soft-shelled. The mean weight of the catch was 4 pounds, the range in weight was from 1 to 22 pounds. Morphometric measurements (17) were made on each of 200 lobsters, and 54 blood samples were obtained.

Herring: Six herring trawl sets were made at the 6 stations covered. The sets (1-hour duration) made in waters of 28 to 44 fathoms yielded a total of $5\frac{1}{4}$ bushels of fish. The herring were caught primarily in the southwest and southeast part of the Banks, with only a few taken at 3 of the stations worked. The herring were from 12.0 to 32.5 centimeters (4.7 to 12.7 inches) long. The 1960 year-class was dominant in the catches, followed in percentage occurrence by sardine-size

herring (1962 and 1963 year-classes). A total of 50 herring blood samples were obtained and frozen in liquid nitrogen.

PLANKTON OPERATIONS: Lobster: Thirteen 1-meter net plankton tows, lasting 15 minutes each (at the surface) were made during the cruise.

Herring: A total of 26 1-meter net plankton tows each lasting 15 minutes (5 minutes each at depths of 32.5 feet and 4.7 feet, and 5 minutes at the surface) was made during the cruise. A total of 452 larvae with a mean length of 38 millimeters of 1.5 inches (range 27 to 52 millimeters or 1.1 to 2.0 inches) was obtained.



High-speed plankton sampler is hauled in and samples transferred to glass jar.

HYDROGRAPHIC OBSERVATIONS: During the cruise, 5 sea-bed drifters and 5 drift bottles were released at each of the plankton tow stations. At each station, bathythermograph (BT) casts were made; surface, mid-depth, and bottom salinity samples collected; and weather observations recorded. Surface and bottom temperatures were taken and recorded at lobster and herring stations worked.

The Albatross IV was scheduled to leave her home port at Woods Hole, Mass., on May 5 to conduct a survey of the sea scallop grounds on the eastern part of Georges Bank.

Note: See Commercial Fisheries Review, May 1965 pp. 25 and 26.

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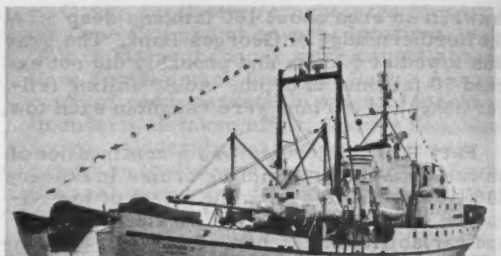
SEA SCALLOP POPULATION SURVEY ON GEORGES BANK CONTINUED:

M/V "Albatross IV" Cruise 65-6 (May 3-13, 1965): To collect data on the distribution and abundance of sea scallops on the major scallop grounds of Georges Bank and to obtain samples of bottom invertebrates was the purpose of this 9-day cruise by the research vessel Albatross IV.



The U. S. Bureau of Commercial Fisheries research vessel Albatross IV.

A total of 194 tows was made at 192 stations with a 10-foot standard sea scallop dredge with a 2-inch ring bag. Hydrographic operations consisted of 212 bathythermograph (BT) casts made at each station worked and at hourly intervals while steaming to and from Georges Bank. About 100 live sea scallops were brought back for study at the Bureau's Biological Laboratory at Woods Hole, Mass.

Note: See Commercial Fisheries Review, December 1964 p. 51.

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BARNACLE LARVAE IN GULF OF MAINE AND RELATION TO SARDINE FEED:

Several biological research cruises to determine the abundance and distribution of barnacle larvae and other planktonic organisms along the Maine coast were conducted earlier this year by research vessels operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Boothbay Harbor, Me. This short article documents the results of those cruises and relate the findings to the type and amount of feed found in sardine stomachs during the period.

The first cruises with the Bureau's research vessel Phalarope II in the areas of Boothbay Harbor, Pemaquid and Tenants Harbor, showed that the waters were dominated by barnacle larvae in early stages of development. All plankton samples were between 75-90 percent barnacle larvae. The greatest abundance occurred in the bays and decreased in the offshore areas (2 miles out). The later cruises in those areas showed less difference between inshore and offshore waters and a reduction of barnacle larvae by nearly 50 percent. In addition, the larvae were in late

stages of development and were concentrated in depths between 2 to 15 fathoms. The greatest numbers occurred at a depth of 5 fathoms. Those results showed that the peak swarming in the western area had passed and that it should continue to subside.

Another cruise was made in early April 1965 by the research vessel Rorqual to compare the plankton in eastern and western waters. The samples from areas west of Penobscot Bay were dominated by barnacle larvae, most samples tallying 80 percent of that species. In the area of Isle au Haut, the total plankton volumes were much lower and only 10 percent were barnacle larvae. Samples from Passamaquoddy Bay and in the vicinity of the Wolves showed less than 2 percent barnacle larvae and red feed (copepods) dominated the samples. This information, together with records from past years, suggests that the swarming of barnacle larvae in eastern waters may not occur until May.

An examination of sardine stomachs corroborated the Bureau scientists' findings on the time of barnacle swarming. Fish taken near Pemaquid in early March contained no barnacle larvae and were generally free of feed. By late March, some of the samples of fish were 90 percent feedy with barnacle larvae, whereas other samples were entirely free of feed. Samples during the first two weeks in April also varied considerably, but in those fish that were feedy, barnacle larvae dominated the feed. Samples from eastern waters had no barnacle larvae and were generally less feedy.

As the sea water temperatures continue warming, other plankton organisms were expected to increase in number and to reach bloom stages. Feedy sardines can be expected to occur coincident with those blooms, although with warmer temperatures, the metabolic rate will increase and clearing time will be less than in the winter and early spring months.

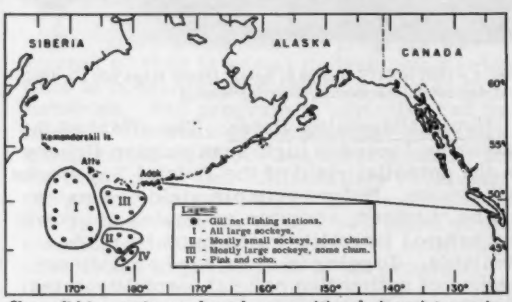
Note: See Commercial Fisheries Review, May 1965 pp. 25 and 26.

North Pacific Fisheries Investigations

WINTER 1965 SALMON RESEARCH CRUISE IN WESTERN NORTH PACIFIC BY RESEARCH VESSEL "GEORGE B. KELEZ":

A two-month salmon research cruise in the western North Pacific Ocean by the U. S. Bureau of Commercial Fisheries research vessel George B. Kelez was completed on March 28, 1965. Earlier cruises by the Bureau's research vessel have shown large concentrations of immature salmon (primarily sockeye and chum) to be close to the south side of the Aleutian chain during summer. Results of the George B. Kelez fall 1964 cruise, however, indicated that the area of greatest abundance had shifted to the western Aleutian region. The winter 1965 cruise was designed to trace the salmon migration during winter by gill-net fishing in the same general area fished during the fall of 1964, according to the Bureau's Biological Laboratory, Seattle, Wash.

A total of 24 gill-net sets were made between Adak Island and the Kommandorski Islands, and south to 43° N. The total of about 1,300 fathoms of surface gill nets with mesh sizes ranging from 2 to 5¼ inches (stretched measure), took 598 sockeye, chum, pink, and coho salmon. The northern and western portions of the area fished yielded mostly large and probably maturing sockeye salmon; a "band" of immature, 1-winter-at-sea, sockeye was found near 46.5° N., and pink and coho salmon (but no sockeye) were caught south of 45° N. Chum salmon were taken in small but consistent numbers throughout the eastern half of the cruise. The southern limit of winter salmon distribution in that area appears to be near 43° N., where only one chum salmon was collected (chart).



Shows fishing stations and catch composition during winter cruise of research vessel George B. Kelez.

Four experimental deep nets, which fished from the surface to a depth of 72 feet, were tried at several stations to investigate vertical salmon distribution. Only three salmon were taken deeper than 24 feet.

Note: See Commercial Fisheries Review, April 1965 p. 28; January 1965 p. 46.

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SALMON MORTALITY AND GILL-NET DROPOUT STUDIES IN EASTERN ALEUTIAN AREA:

Three research vessels of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Seattle, Wash., were scheduled to leave for the eastern Aleutian area in May 1965 where they were to conduct biological studies on salmon. The research vessels are the George B. Kelez, and the two chartered vessels Yaquina and the Paragon.

The primary objectives of the cruises are to: (1) study mortality of Bristol Bay salmon during their last 6 weeks of ocean life, and (2) determine the magnitude of salmon dropouts from high-seas gill nets.

Fig. 1 - Hull of M/V George B. Kelez. (Photo taken July 20, 1962, at dedication ceremonies, Seattle, Wash.)

Natural Mortality Rates: The effect of the extensive Japanese high-seas salmon fishery on the potential yield of the Bristol Bay stocks is unknown. Before reliable yield estimates can be obtained, adequate estimates of growth and natural mortality rates must be made available. Tagging is to be used as a direct method of estimating natural mortality rates. The George B. Kelez was to long line and gill net, and the Yaquina was to purse seine to provide fish for tagging purposes. Tagging operations were to start about June 5 south of Umnak Island in the Aleutian Chain, and were to terminate just outside the Bristol Bay fishery about July 5. Most salmon were to be tagged with Petersen disc tags, but some with the "spaghetti"-type tag in an attempt to measure gill-net selectivity for the disc tag. The assignment of a physiologist on board the George B. Kelez was to attempt to assess tagging mortality and apply holding oxygen treatments as possible means of reducing such mortality.

Fig. 2 - Salmon being tagged on the high seas to obtain information on growth rates, mortality, and migration during ocean life.

Gill Net Dropouts: In a concurrent study the vessels Paragon and the Kelez were to fish special strings of gill nets to determine salmon dropout rates (salmon caught in gill nets, but not landed). It is not known what percentage of salmon escape from high-seas gill nets, or what percentage of salmon that escape from nets may perish before reaching the inshore fishery or the spawning streams. The gill nets were to be fished for varying periods of time throughout the night and the catches compared for nets fished for long periods versus the cumulative catch of nets fished during shorter time intervals. The gill nets fished for the dropout study were to also provide some fish for tagging.

Oceanography

NEW ORGANIZATION WORKS TO DEVELOP SOUTHERN NEW ENGLAND AS A MARINE RESEARCH CENTER:

A group seeking to further develop southern New England as a national center for marine research has formed the Southern New England Marine Sciences Association (SNEMSA). The new organization was announced May 25, 1965, by the president of the University of Rhode Island. He said SNEMSA could help bring ocean-oriented industries and research groups to the area and also strengthen exist-

ing firms. "The result," he added, "would be more jobs and a healthier economy."

Explaining the need for the new organization he said, "Most of the ingredients for a strong scientific complex--marine-based industries, federal research laboratories, and graduate programs in oceanography and engineering--are already here, but we have lacked a rallying point and a focal point for leadership which, I believe, this organization can provide."

One of the first projects of SNEMSA will be an economic inventory of the people, facilities, and other resources within southern New England. The inventory will be made by the chairman of the University of Rhode Island Department of Food and Resources Economics. He expressed enthusiasm for the project "because the area under consideration has many characteristics of an economic region that we can study and hopefully assist with some imaginative planning."

The economist pointed out that "the area has a historic association with the sea, its occupations, and its problems. It is confined in terms of natural resources to those created by the meeting of the sea with the land; that is to say: bays, harbors, fishable waters, beaches, and landscapes characterized by the sea and its climate."

The dean of the University of Rhode Island Graduate School of Oceanography was elected chairman of SNEMSA at a meeting attended by some 25 individuals from seaboard organizations in Connecticut and Rhode Island. The membership includes marine scientists, businessmen, fisheries men, and administrators. Membership is on an "individual" rather than an "organizational" basis.

The objectives of SNEMSA are to: (1) foster the development of the marine sciences in southern New England; (2) develop a system of internal communication to summarize technical and general information available within the group; (3) develop a system of external communication with the public; (4) develop a system of Government liaison; and (5) provide an intellectual climate that would serve to attract scientific and technical personnel to the area. (University of Rhode Island, Kingston, R. I., May 25, 1965.)

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EDUCATIONAL GRANTS FOR 1965 AWARDED BY INTERIOR DEPARTMENT:

Graduate educational grants in oceanography have been awarded by the U. S. Department of the Interior to 18 universities as part of the National Oceanographic Program, announced Interior's Secretary Stewart L. Udall, May 17, 1965. The awards will be available for the 1965 fall semester to outstanding and deserving student scientists, who have or are about to be graduated, selected by the universities to receive one- or two-year grants.

The 1965 grants are for studies in economics, fishery technology, taxonomy (science of classification), physical and chemical oceanography, marine biology, fishery biology, ocean engineering, and biological oceanography. A total of 42 student years will be awarded, 5 years of which may be used at the discretion of the institutions to extend the grants of 5 students already participating in the program.

Grants provide for payment of tuition fees plus a living expense allowance of $3,000 annually. Married students with children receive an additional $1,000 family allowance. Students at the University of Alaska's Institute of Marine Science receive an additional 25 percent of each allowance, if both are applicable, because of the higher cost of living in Alaska.

Secretary Udall said the program was started in 1962 to assist in developing scientists in oceanographic subjects related to fisheries. The program is administered by Interior's Bureau of Commercial Fisheries which makes $200,000 available annually for the study program. Universities receiving the grants are selected by the Department of the Interior with the advice of a panel of outstanding scientists. All qualified institutions are invited to participate in the program. Grants were made to 12 universities in 1962 and to 17 in 1963 and 1964.

Students' applications for grants are submitted directly to the university of their choice. The actual number of participating students is contingent upon decisions by the universities in awarding one- or two-year grants.

Universities receiving the 1965 grants and the various fields of study are: University of Florida, economics; University of Massachu-

setts, economics and fishery technology; Oregon State University, ocean engineering, biological oceanography and fishery technology; University of Alaska (Institute of Marine Science), chemical oceanography; University of Washington, fishery technology and physical oceanography; Scripps Institution of Oceanography, physical and/or biological oceanography; The Johns Hopkins University, physical oceanography; Rutgers University, fishery technology; University of Miami (Institute of Marine Science), fishery biology and physical oceanography; University of Michigan, fishery biology; Cornell University, fishery biology; University of Rhode Island, biological oceanography; Harvard University, marine biology and ecology or biological oceanography; Duke University, marine biology and ecology; University of Hawaii, marine biology and ecology; Michigan State University (W. K. Kellogg Biological Station), limnology (study of lakes and their contents); University of Texas, taxonomy or fishery biology; University of Georgia, marine biology and ecology or fishery biology.

Note: See Commercial Fisheries Review, May 1964 p. 28.

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FOURTH EXPEDITION TO GULF OF GUINEA COMPLETED BY RESEARCH VESSEL "GERONIMO":

After completing a 4-month 15,000-mile expedition to the Gulf of Guinea off West Africa, the oceanographic research vessel Geronimo, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Washington, D. C., returned to her home base at the Navy Yard Annex on May 18, 1965.

This fourth cruise of the research vessel Geronimo to West Africa during the International Cooperation Year, now being observed worldwide, was another contribution to United States participation in cooperative international studies of the tropical Atlantic Ocean. Those studies were begun in 1963 and have involved some 20 oceanographic research vessels from many nations. One of the major goals is to gain knowledge useful in increasing the supply of protein for West African countries. The Geronimo's Chief Scientist on the cruise said the vessel's latest expedition was successful in accomplishing two main objectives: (1) further measurement of a heretofore unknown ocean current in the Gulf of Guinea, and (2) confirmation of hypotheses about the distribution of tuna schools off West Africa.

During the first cruise of the vessel Geronimo to the Gulf of Guinea in 1963, the odd behavior of research instruments in the water below the eastward-flowing Guinea Current led scientists to believe that a substantial westward-flowing undercurrent existed. On subsequent cruises, the formerly unknown Guinea Undercurrent was confirmed, and the measurement of its role in the Gulf of Guinea circulation has been accomplished.

Scientists and crew aboard the Geronimo are preparing to open the cod end of a large trawl to study the organisms captured.

The wide-ranging tuna are found where their food is most abundant--generally near the boundary between ocean water of differing types and origin. In February 1965 such a boundary was found offshore from Senegal to Sierra Leone, West Africa, by scientists aboard the Geronimo. As predicted, great concentrations of tuna schools were located just to the south of that boundary.

A new oceanographic instrument, developed at the University of Miami, was tested from the Geronimo on this latest cruise. When lowered into the water, it records aboard ship simultaneously and continuously the depth, temperature, salinity, and time. Its use will greatly increase the speed and efficiency of data collection on future oceanographic surveys.

While on this expedition, the vessel Geronimo rendezvoused with the John E. Pillsbury, the fishery and oceanographic research vessel of the Institute of Marine Science, University of Miami. Particular concern of the joint research was a study of variations in rate of flow of the Atlantic Equatorial Under-

current and changes in its north-south location.

The latest cruise of the vessel Geronimo also had other international aspects. Two French scientists of the ORSTOM Laboratory at Pointe-Noire, Republic of Congo (Brazzaville), worked aboard the Geronimo during the tuna surveys. They are studying the population dynamics of tuna off West Africa. At Monrovia, Liberia, about 20 biology students from the University of Liberia were shown the vessel's laboratories and its oceanographic equipment. Also, during a tuna survey in waters off the Republic of Ivory Coast, a one-day cruise was arranged for fishery administrators and fishery scientists, and fish processors of that nation to demonstrate various oceanographic techniques.

Note: See Commercial Fisheries Review, January 1965 p. 43.

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RESEARCH VESSEL "JOHN ELLIOTT PILLSBURY" STARTS LONG OCEANOGRAPHIC EXPEDITION:

A 23,00-mile oceanographic expedition to the Caribbean, South America, Africa, and the Mediterranean was started in March 1965 by the oceanographic research vessel John Elliott Pillsbury. The 176-foot vessel is operated by the Institute of Marine Science (IMS), University of Miami, and will be at sea about 9 months.

The vessel's itinerary and research activities on the expedition include studies of productivity and the chemistry of sea water in the Guiana basin and at the mouth of the Amazon River. Following those studies, she will cross the Atlantic at the equator, investigating surface and subsurface currents en route. On this lap of the cruise, the IMS oceanographers aboard the vessel will take part in Equalant V, an international suvey of the tropical Atlantic in which scientists from 11 nations are participating. During an earlier phase of Equalant, the IMS vessel discovered an immense undersea mountain, or seamount, in that part of the Atlantic. The peak has been named Pillsbury Seamount. During Equalant V, the Institute's vessel will cooperate closely with the U. S. Bureau of Commercial Fisheries research vessel Geronimo. The Bureau's research vessel will operate out of Miami after the new U. S. Fish and Wildlife laboratory has been completed.

Along the west coast of Africa the Institute's Division of Biological Sciences will conduct an investigation of the southern part of the Gulf of Guinea, collecting fish and invertebrates from surface waters, mid-depths, and from the deep-sea floor.

Following the Gulf of Guinea studies, the John Elliott Pillsbury will then proceed north to the Straits of Gibraltar and enter the Mediterranean Sea. While in that area, a geological, geophysical, and geochemical investigation of the Mediterranean Sea and the Black Sea will be conducted for about $5\frac{1}{2}$ months. Submarine volcanoes will be investigated, and studies of deep-sea sediments, currents, and bottom topography will be carried out. In the Black Sea, sometimes known as the "Kingdom of the Dead," piston-coring devices and bottom dredges will be used to sample the poisonous depths. In that body of water, there are no living organisms of any kind (except for a few bacteria) below the surface layers, and no oxygen, and consequently the bodies of surface animals that sink to the depths do not decompose in the usual manner. In the Black Sea, the vessel scientists hope to find bodies of ancient forms still intact on the bottom. There, also, are possibly ideal conditions for the formation of petroleum--about which very little is known to science.

The Institute's research vessel John Elliott Pillsbury was commissioned in July 1963, and since than has logged more than 330 days and over 50,000 miles at sea on expeditions and cruises for the Miami Institute of Marine Science. The vessel carries a crew of 22 and a scientific party of about 14. (News of Institute of Marine Science, Miami, Fla., March 5, 1965.)

Note: See Commercial Fisheries Review, September 1964 p. 34.

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RESEARCH VESSEL "EASTWARD" DEDICATED BY DUKE UNIVERSITY:

The $1.2 million research vessel Eastward was dedicated May 1, 1965, at Beaufort, N.C., by Duke University. Built under a grant from the National Science Foundation, the 117.5-foot vessel will be used by Duke University for oceanographic research in marine biology.

Speaking at the dedication ceremony, Dr. Paul M. Gross of Duke University said man must turn to the limitless resources of the sea to feed his rapidly growing numbers. Recent scientific discoveries indicate there is "enough food reserve in the ocean to take care of any imaginable population if scientists can only tap it," he said.

Fig. 1 - Duke University president officially accepts the Eastward from the National Science Foundation.

Dr. Gross also noted that the Eastward will allow scientists to study in detail the marine life and conditions off the Carolina coast. The knowledge thus gained could have important implications for the economy of the area.

Fig. 2 - Oceanographic vessel Eastward sails from the dock of the Duke Marine Laboratory in Beaufort, N. C.

At a luncheon preceding the dedication, Congressman David Henderson said the method of the "old-time coastal fisherman is as outmoded as a one-mule farmer's operation." He pointed out that "the only way the present day farmer of the sea can keep pace with this technological age is by having available to him knowledge gained by the same kind of research which has enabled today's farmer of the soil to share so bountifully in the general national prosperity."

Home port for the Eastward will be Beaufort, N.C., where the Duke Marine Laboratory is located. (Office of Information Services, Duke University, Durham, N.C.)

Oregon

GOOD DOWNSTREAM PASSAGE REPORTED FOR CHINOOK SALMON YEARLINGS RELEASED DURING FLOOD EMERGENCY:

Apparently, many of the 2.2 million spring chinook salmon yearlings released prematurely last winter into the Middle Willamette River were able to pass downstream to the sea. Floods forced the emergency release above Lookout Point Dam and Dexter Dam of the yearlings from the Willamette Hatchery of the Oregon Fish Commission. (The fish were intended for release below the dams in the spring of 1965.)

Since neither dam has provisions for passage of fish, either downstream or upstream, it had been feared that most of the 2.2 million yearlings--a major part of the Willamette hatchery's 3.5 million spring chinook production--would be trapped in the reservoirs behind the dams. But water ran over the spillways at both Lookout Point and Dexter for more than a month during and following the flood. That apparently made it possible for most of the young fish to pass downstream.

While many of the fish appear to have escaped, the Oregon Fish Commission estimates that several hundred thousand of the young spring chinook could be landlocked in the reservoirs. To give those trapped fish an opportunity to escape, the U. S. Army Corps of Engineers agreed informally to spill water over the dams on a daily schedule in the spring of 1965 if the reservoirs fill.

The 1967 and 1968 spring chinook runs will include survivors of the emergency release returning as 4- and 5-year-old spawners. During the past 4 seasons, an average of 12 percent of the chinook passing up the ladder at Willamette Falls have eventually entered the holding ponds at Dexter, indicating the important role the Middle Willamette hatchery is playing in helping to maintain the valuable Willamette spring chinook run. (Oregon Fish Commission, May 10, 1965.)

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STEELHEAD STOCKING PROGRAM:

An expanded steelhead stocking program in certain of Oregon's streams has been announced by the Oregon Fish Commission. Some 328,000 juvenile steelhead trout from 3 Oregon hatcheries were released during late April 1965 into 4 river systems of Oregon.

When released, most of the young steelhead averaged 8 to 9 inches in length and weighed 7 or 8 to the pound--an optimum size, according to the Oregon Fish Commission. Experience has shown that steelhead of that size will make a rapid migration to the sea in the spring of the year, thereby arriving at the ocean with less mortality and in a shorter time than smaller fish. Steelhead with such a strong start should produce good returns of adult fish.

The April 1965 steelhead plant included 73,000 in the North Fork of the Klaskanine River, 55,000 in Big Creek, 156,000 in the North Santiam River, and 44,000 in the South Fork of the Yamhill River. (Oregon Fish Commission, May 7, 1965.)

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DUNGENESS CRABS MARKED WITH "SPAGHETTI" TAGS:

On the Pacific coast, some 4,000 Dungeness crabs were marked with "spaghetti" tags in the spring of 1965 by the Oregon Fish Commission. Each tag consists of red plastic tubing about 12 inches long and $\frac{1}{16}$ inch in diameter. The tag bears a number and a legend requesting that capture of the crab be reported to the Oregon Fish Commission. Information on the location and date of capture as well as the tag number should be noted in reporting marked crabs.

The Dungeness crabs were tagged by sewing the "spaghetti" tag through paired holes punched in the shell at the splitting line (along which the shell separates during the molt). With this method of attachment, the tag is retained when the crab sheds its shell during molting. Records of the Oregon Fish Commission show that tags have been retained through at least three successive molts. (Oregon Fish Commission, May 10, 1965.)

Note: See Commercial Fisheries Review, May 1962 p. 25.

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CLAM SPECIES ESPECIALLY SUITED TO BAYS AND ESTUARIES INTRODUCED ON TEST BASIS:

The possibility of introducing another species of clam into Oregon tidal waters is being evaluated by the Oregon Fish Commission.

The species being considered is the Japanese littleneck clam. Accidentally introduced into Washington State waters some years ago, apparently with a shipment of seed oysters from Japan, the "foreign" littleneck found environmental conditions to its liking and soon became an important commercial and personal use species in the Puget Sound area.

Oregon now has a native littleneck clam which occurs in rocky areas along the coast but, with few exceptions, the native variety is killed readily by exposure to fresh-water dilution of its normal salty environment. By contrast, an outstanding biological characteristic of the Japanese littleneck is its ability to tolerate fresh water. This should make it adaptable to many Oregon bays and estuaries which are subject to heavy runoff from streams during flood periods. Japanese littlenecks show a preference for rocky or gravel-mud bottoms, a type of site not generally favored by species already present in the State.

With the cooperation of the Washington State Department of Fisheries, several thousand Japanese littlenecks of various size were obtained for experimental introduction into Oregon. Some of those clams were planted in an experimental area in Yaquina Bay. Others were placed at selected spots in Tillamook and Netarts Bays. Studies will be conducted over a period of time to learn whether the new species will do well under Oregon conditions as expected. A favorable outcome could mean good news to hundreds of Oregonians who reap a harvest of fun and profit from the State's tidelands. (Oregon Fish Commission, April 29, 1965.)

Oysters

ANNUAL CONVENTION OF OYSTER INSTITUTE OF NORTH AMERICA:

The annual meeting of the Oyster Institute of North America was held June 27-July 1, 1965, in Baltimore, Md. It was the 57th an-

nual Oyster Convention--a joint meeting of industry's Oyster Growers and Dealers Association of North America and the technical people who are members of the National Shellfisheries Association. Represented at the annual meetings were producers, processors, distributors, and other related industry people, as well as researchers from Federal and State government agencies.

A joint session was held on hatchery and pond techniques for the pond and nursery technology of oyster and clam seed. Besides a number of outstanding speakers, there were many other prominent contributors to the knowledge of shellfish culture.

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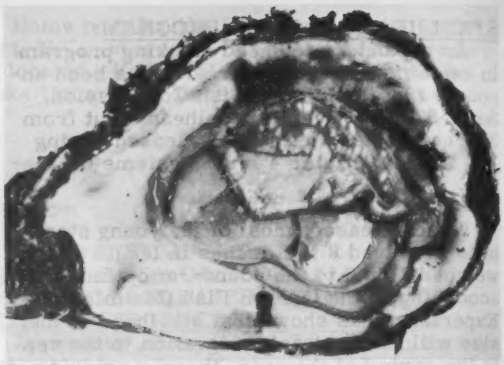
NEW PARASITE DISEASE UNDER STUDY:

A disease of oyster gill tissue is under study at the U. S. Bureau of Commercial Fisheries Biological Laboratory in Oxford, Md. The disease is caused by a microparasite which has been tentatively placed in the genus Sphenophrya. The organism is a ciliate found in large cysts on the gill surface of diseased oysters. Study of the parasite includes efforts to culture it in a wide variety of media and under a number of experimental conditions.

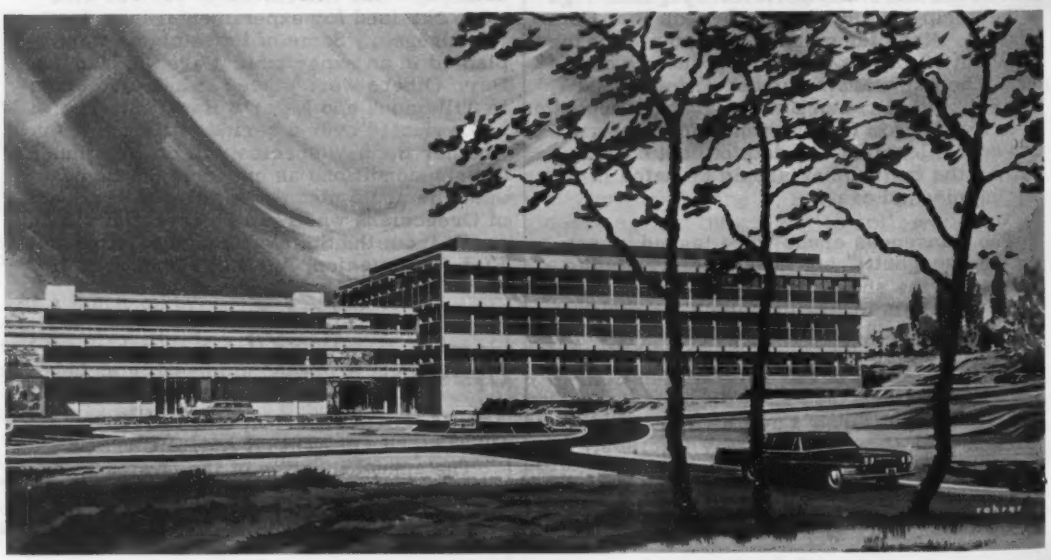


Pathological evidence of a microparasite on oyster gill tissue. Note large encysted bodies on gill surfaces and within tissue matrix. Microscopic examination of cyst contents revealed numerous ciliates to be present.

Pacific Northwest

NEW U. S. BUREAU OF COMMERCIAL FISHERIES RESEARCH LABORATORY IN SEATTLE:

The U. S. Bureau of Commercial Fisheries dedicated its new Fishery Research Laboratory in Seattle, Wash., April 19, 1965. "This facility, with all the latest scientific equipment, marks the beginning of a new era in



Artist's sketch of the new Seattle Fishery Research Laboratory dedicated April 19, 1965.

biological and technological research," said Samuel J. Hutchinson, the Bureau's Regional Director for the Pacific Northwest. The new 4-story laboratory contains 65,000 square feet of floor space and will provide accommodations for 100 scientists and their support personnel.

Among projects to be conducted in the new building are research on the promising new hake industry in the Northwest and new uses for fish oil.

A feature of the new building is a water temperature control system which permits biologists to study the effect of temperatures on survival of salmon eggs, fry, and fingerlings. Such information is needed to improve hatcheries.

Speaking at the dedication, Regional Director Hutchinson reviewed the growth of North Pacific fisheries research programs. These include studies of salmon, herring, and crab; chemical research to find improved uses for fish and marine products; and exploratory fishing and gear research. The growing importance of those programs created the need for the new laboratory.

Senator Warren G. Magnuson gave the main address at the dedication of the new laboratory. He emphasized the problems arising out of foreign fishing in the North Pacific. In his opening remarks, Senator Magnuson said "But I wish to emphasize to you today that the dedication of this building is more than a dedication of a proud structure. It is a dedication and renewed effort to properly manage, conserve, and develop our fisheries in the North Pacific. It is a dedication to protect, by whatever means necessary, these resources which have been passed to us and which we resolve to conserve for our future generations."

Salmon

U. S. PACIFIC COAST CANNED STOCKS, MAY 1, 1965:

On May 1, 1965, canners' stocks in the United States of Pacific canned salmon totaled 1,150,880 standard cases (48 1-lb. cans), 284,865 cases less than on April 1, 1965, when stocks were 530,442 cases less than on March 1, 1965.

On the basis of a total of 1,383,060 actual cases (consisting of cans of $\frac{1}{4}$-lb., $\frac{1}{2}$-lb., 1-lb., etc.), pink salmon accounted for 47.3 percent (654,421 cases of which 519,443 cases were 1-lb. talls) of the total canners' stocks on May 1, 1965. Next came chum (373,892 cases, mostly 1-lb. talls), followed by red (227,847 cases). The remainder of about 9.2 percent was coho (silver) and king salmon. Pink salmon stocks on hand packed in 48 1-lb. cans accounted for 79.4 percent of the to-

Table 1 - Total Canners' Stocks of Pacific Canned Salmon, May 1, 1965

Species	May 1, 1965	Apr. 1, 1965	Mar. 1, 1965
	(No. of Actual Cases)		
King	39,645	46,882	63,915
Red	227,847	299,277	411,505
Coho	87,255	102,233	128,589
Pink	654,421	849,663	1,201,716
Chum	373,892	428,803	536,529
Total	1,383,060	1,726,858	2,342,254

Table 2 - Total Canners' Stocks on Hand May 1, 1965 (Sold and Unsold), By Species and Can Size

Case & Can Size	King	Red	Coho	Pink	Chum	Total
	(Actual Cases)					
48 $\frac{1}{4}$-lb.	3,995	57,005	20,244	2,464	122	83,830
48 $\frac{1}{2}$-lb.	31,212	118,901	16,947	125,557	45,997	338,614
48 1-lb.	4,335	51,883	46,771	519,443	315,530	937,962
12 4-lb.	103	58	3,293	6,957	12,243	22,654
Total	39,645	227,847	87,255	654,421	373,892	1,383,060

Table 3 - Canners' Shipments from July 1, 1964, to May 1, 1965, By Species and Can Size

Case & Can Size	King	Red	Coho	Pink	Chum	Total
	(Actual Cases)					
48 $\frac{1}{4}$-lb.	20,252	370,927	102,448	9,217	1,322	504,166
48 $\frac{1}{2}$-lb.	105,630	568,193	37,428	477,911	112,094	1,301,256
48 1-lb.	17,786	446,171	121,738	1,878,481	563,077	3,027,253
12 4-lb.	313	4,892	18,197	92,440	27,299	143,141
Total	143,981	1,390,183	279,811	2,458,049	703,792	4,975,816

tal pink salmon stocks as of May 1, 1965, with the balance mostly in 48 ½-lb. cans.

From April 1 to May 1, 1965, pink salmon stocks were lower by 195,242 actual cases (1-lb. talls lower by 157,119 cases), reds were down 71,430 cases, and chums were down 54,911 cases.

Carryover stocks at the canners' level totaled 1,175,588 standard cases on July 1, 1964, the approximate opening date of the Pacific salmon packing season. Adding the new season pack of 3,922,356 standard cases brought the total available supply for the 1964/65 season to 5,097,944 standard cases.

Shipments at the canners' level from July 1, 1964, to May 1, 1965, totaled 4,975,816 actual cases (equal to 3,947,064 standard cases).

Data on canned salmon stocks are based on reports from U. S. Pacific Coast canners who packed over 97 percent of the 1964 salmon pack. (Division of Statistics and Economics, National Canners Association, May 26, 1965.)

Shrimp

GULF AND SOUTH ATLANTIC LANDINGS, 1964:

United States commercial shrimp landings (heads-off weight) in the Gulf and South Atlantic States during 1964 totaled 124.3 million pounds with an ex-vessel value of $69.3 million--a decrease of 10 percent in quantity, but an increase of 1 percent in value from 1963. Landings in the southern States made up over 90 percent of the total 1964 U. S. shrimp catch.

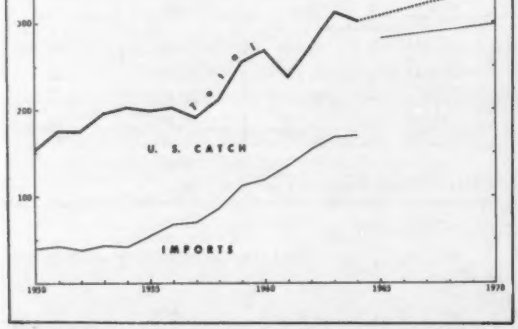


Fig. 1 - U. S. shrimp supply, 1950-1964 with forecast to 1970.

Fig. 2 - Shrimp trawlers at the dock in a Mississippi port.

In 1964, Texas led all other southern States with total shrimp landings of 41.6 million pounds, followed by Louisiana with 38.1 million pounds, and the Florida West Coast with 25.0 million pounds. The remaining 19.6 million pounds was landed in ports of Mississippi, Alabama, the Florida east coast, Georgia, South Carolina, and North Carolina.

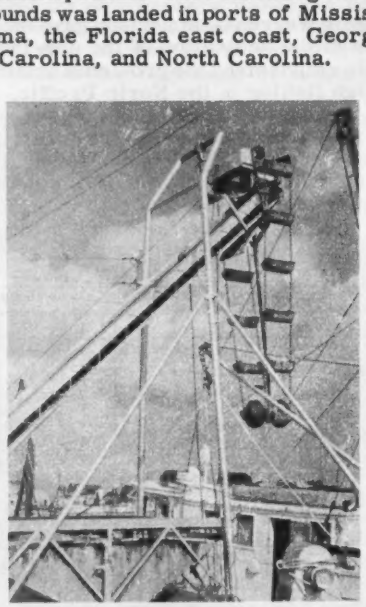


Fig. 3 - Conveyor used to unload shrimp from vessels at Aransas Pass, Tex.

Brown shrimp was the leading species landed in Texas, while white shrimp predominated at Louisiana ports, and pink shrimp made up the bulk of the Florida west coast landings.

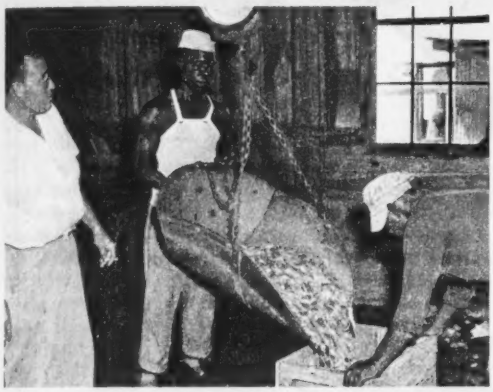


Fig. 4 - Weighing fresh heads-off shrimp in a Florida plant.

A breakdown, by major fishing areas, of the 1964 Gulf catch (excluding the Atlantic areas), shows 12.4 million pounds were taken from Sanibel and Tortugas; 3.2 million pounds from the Apalachicola area; 11.5 million pounds from Pensacola to the Mississippi River; 37.8 million pounds from the Mississippi River to Texas; 29.6 million pounds from the Texas coast; 5.2 million pounds from the high seas off the Mexican Coast west of 94° W. longitude; 12.2 million pounds from the high seas off Obregon and Campeche; and 1.3 million pounds from the Caribbean Sea south of 21° N. latitude. A large part of the Gulf catch was taken in depths of under 20 fathoms, and (with the exception of royal-red shrimp) almost all of the catch was taken under 45 fathoms.

(Note: Gulf catch data for 1964 are not comparable with landings data shown above because in the Gulf data: (1) South Atlantic catches are not included, and (2) catch data include trips completed during the year, regardless of when landings occurred.)

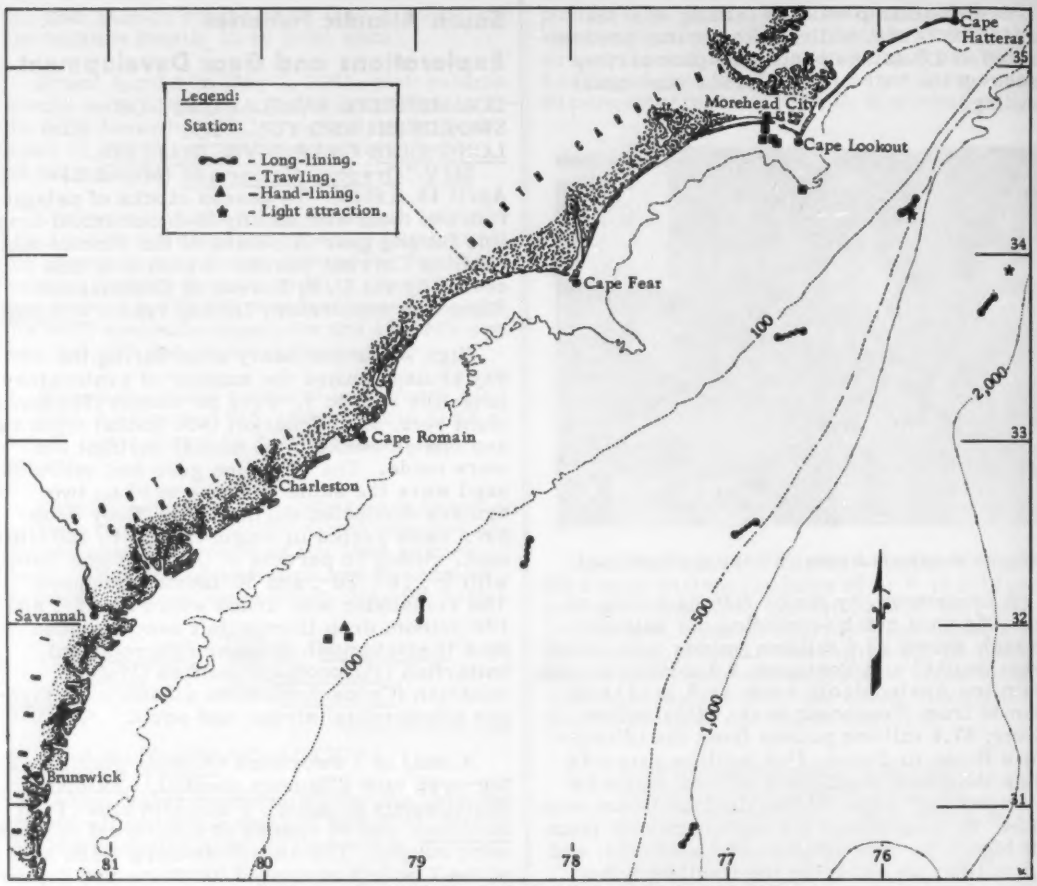
South Atlantic Fisheries Explorations and Gear Development

COMMERCIAL AVAILABILITY OF SWORDFISH AND TUNA TO LONG-LINE GEAR INVESTIGATED: M/V "Oregon" Cruise 100 (March 29-April 16, 1965): To assess stocks of pelagic fish and their availability to commercial long-line fishing gear in waters of the Florida and Antilles Current was the objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon.

High winds and heavy seas during the 19-day cruise limited the number of exploratory long-line sets to 7. Five 50-basket (500 hooks) night sets, one 40-basket (400 hooks) night set, and one 30-basket (300 hooks) daylight set were made. The long-line gear and methods used were the same as those used on two cruises conducted during 1964. Buoy droppers were varied in length from 5 to 100 fathoms. About 75 percent of the gear was fished with 5-, 10-, 20-, and 30-fathom droppers. The remainder was fished with 50-, 75-, and 100-fathom drop lines. Bait used included spot (Leiostomus), croaker (Micropogon), butterfish (Poronotus), goatfish (Mullus), weakfish (Cynoscion), false albacore (Euthynnus alletteratus) strips, and squid.

A total of 7 swordfish (Xiphias gladius), 2 big-eyed tuna (Thunnus obesus), 1 skipjack (Katsuwonus pelamis), 7 blackfin tuna (T. atlanticus), and 98 sharks of 6 different species were caught. The swordfish were taken at 5 of the 7 widely scattered locations and depths sampled during the cruise. Three swordfish were caught at a station in 190 fathoms east of Frying Pan Shoal, and 4 swordfish were caught at 4 different localities with depths varying from 165 to 1,800 fathoms. Baskets with 10-fathom buoy droppers yielded 4 swordfish, those with 20-fathom droppers accounted for 2, and those with 50-fathom droppers yielded 1 swordfish. Two big-eyed tuna were caught on 20-fathom droplines over 1,800 fathoms east of Cape Lookout. One skipjack tuna was caught from a large school that had surfaced around the vessel during retrieval of the long line at one of the stations.

Large numbers of sharks were again encountered as in previous cruises to the area investigated at the edge of the Continental Shelf. They were a detriment to fishing oper-



Station pattern of M/V Oregon Cruise 100 (March 29-April 16, 1965).

tions and caused gear fouling resulting in mutilated fish. A total of 28 sharks, mostly silky (Carcharhinus falciformis, were taken in 165 fathoms at one station. At the station off Cape Lookout, an unexpected northwest drift moved the long-line set from 500 fathoms to 40 fathoms where 51 sharks, mostly silky and scalloped hammerhead (Sphyrna lewini), were taken. Very few sharks were encountered beyond the 200-fathom curve. A breakdown of the 98 sharks taken during the cruise is: 51 silky, 28 hammerhead, 10 night (Hypoprion signatus), 5 blue (Prionace glauca), 2 mako (Isurus oxyrinchus), and 2 whitetip sharks (Carcharhinus longimanus). Of those, 31 were tagged and released.

Bathythermograph (BT) casts were made at each long-line station occupied by the vessel. Thermocline depths and temperatures varied widely over the area surveyed. No correlations could be made with the data regarding the relation between swordfish occurrence and the temperatures and depths of the water masses. Two light-attraction and 7 nekton ring-net stations were occupied to sample macroplankton in the area.

During the cruise, 7 trawl hauls in shallow water were made off Savannah, Ga., and Morehead City, N.C., for obtaining bait. Flatfish and puffers dominated the catch in those two areas.

Trolling with bone and lead-head feather jigs yielded 52 false albacore averaging 6½ pounds each. An electronic trolling alarm system was successfully installed aboard the

vessel and tested throughout most of the cruise.

Note: See Commercial Fisheries Review, March 1965 p. 50; January 1965 p. 47.

Tuna

1965 ALBACORE AND BLUEFIN TUNA CATCH FORECAST FOR UNITED STATES PACIFIC COASTAL AREA:

A report on the annual prediction for the expected tuna catch during 1965 in the temperate tuna fishery off the Pacific Coast was issued in May 1965 by the staff of the Tuna Forecasting Program, U. S. Bureau of Commercial Fisheries Biological Laboratory, La Jolla, Calif. It is the fifth in a series of annual predictions and includes additional data incorporated into the prediction system, with the addition of refinements where appropriate.

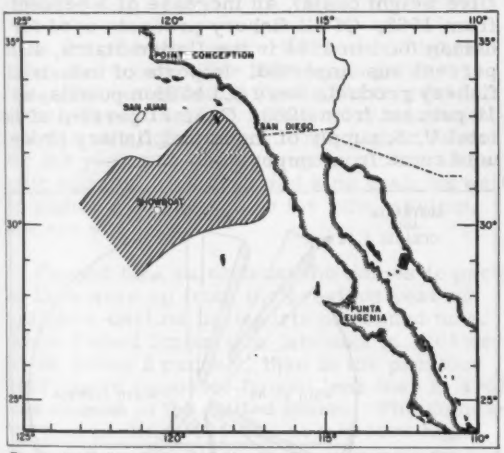


Fig. 1 - Cross-hatched area delineates the region expected to produce about two-thirds of the total July 1965 albacore tuna catch.

The forecast for 1965 consists of three separate estimates of (1) where, (2) when, and (3) how much tuna may be taken at the beginning of and during the summer season. The estimates given for 1965 are in more detail on the southern California offshore region for albacore, with only an estimate of the catch for bluefin.

Where: The area that is expected to produce the best albacore fishing in July off southern California is shown in fig. 1. That area has been determined from April temperature and salinity data taken from a depth of 10 meters (32.8 feet), and represents the "optimum area" that may produce more than two-thirds of the total July 1965 catch. Upwelling has been relatively weak this year in southern California and Baja California, and the albacore may move closer to shore because clear, blue water may extend farther inshore than usual.

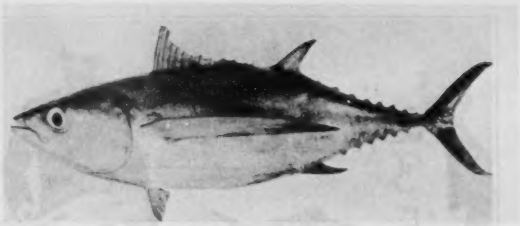


Fig. 2 - Albacore tuna (Thunnus alalunga).

When: Open ocean conditions in the region encompassing the usual migration route of albacore reflected considerable warming commencing as early as mid-February. That general warming trend prevailed through April, and suggests that the shoreward migration may occur earlier than in the last two years. In addition, the waters off Oregon and Washington were beginning to warm noticeably, and suggest that July landings may be near average.

How Much: It was estimated that June landings in southern California would be above the long-term average of 175,280 pounds. As in previous years, estimates of total annual albacore and bluefin landings are restricted by the data available to the region south of the United States-Mexican border for albacore, and for bluefin in the area to the north of the border. This year, about 12.6 million pounds of albacore is expected will be caught south of the United States-Mexican border, and about 8.6 million pounds of bluefin will be taken north of it. Those estimates are near the 14-year average landings for both species.

In 1964, the forecast for albacore landings south of the international border exceeded actual landings by only 13 percent, whereas actual bluefin landings were slightly more than half of the predicted amount. The cause for the major discrepancy in the bluefin estimate is most likely due to major changes in the fishing fleet. Whereas the albacore fleet has experienced no major changes in composition over the past few years, the bluefin fleet has changed greatly. During the past four years, the addition of most of the converted high-seas purse seiners to the bluefin tuna fishing fleet appears

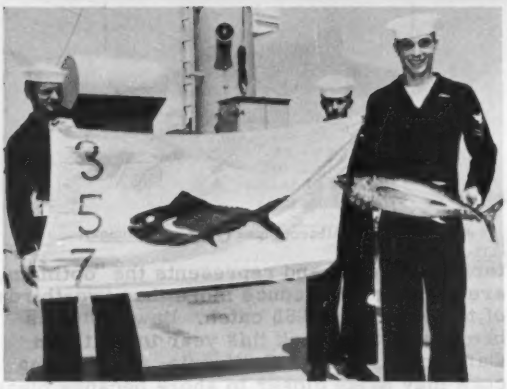


Fig. 3 - Men aboard a Navy radar picket vessel display a sample of their catch.

to have caused the center of production and fishing effort to be shifted farther south into Baja California offshore waters.

The U. S. Bureau of Commercial Fisheries planned to conduct an early-season survey of the "optimum area" for albacore by chartering two commercial albacore trollers. The vessels were to put out to sea on or after June 2 and, in conjunction with the California Department of Fish and Game research vessel N. B. Scofield (at sea from May 25 to June 23), were to report fishing conditions as they developed. Navy radar picket vessels were fishing since May 1, and were to report albacore catches as they occurred. Summary radio broadcasts were being made to the fishing industry to provide information on the shoreward movement of the summer albacore movement.

Note: See Commercial Fisheries Review, August 1964 p. 40.

United States Fisheries

IMPORTED FISHERY PRODUCTS ACCOUNT FOR HALF OF 1964 U. S. SUPPLY:

The United States continued in 1964 as the world's largest importer of fishery products despite very large untapped resources available in waters usually fished by U. S. commercial fishermen. For the second consecutive year, over half the U. S. supply of fish and shellfish in 1964 was from foreign sources. The estimated live weight of edible and industrial fishery products imported by the United States during the year was 7.5 billion pounds, or 62 percent of the total available supply of 12 billion pounds.

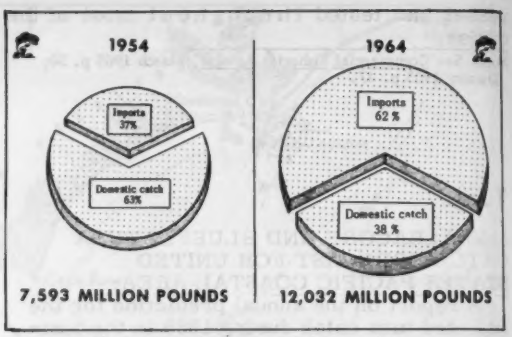


Fig. 1 - U. S. domestic supply of fishery products increased 58 percent since 1954.

United States imports of edible fishery products in 1964 totaled 2.4 billion pounds (live weight basis), an increase of 5 percent from 1963. Of all fishery products used for human food in 1964 in the United States, 49 percent was imported. Imports of industrial fishery products were 5.1 billion pounds, up 18 percent from 1963. Over 71 percent of the total U. S. supply of industrial fishery products came from imports.

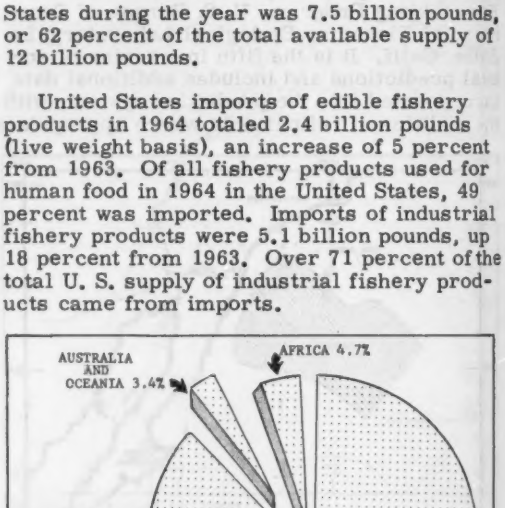


Fig. 2 - Value of U. S. imports from continent of origin, 1963.

In 1964 the U. S. catch of edible and industrial fish and shellfish dropped to 4.5 billion pounds, 7 percent less than in 1963 and the smallest since 1953. But the ex-vessel value of $390 million was up nearly $13 million

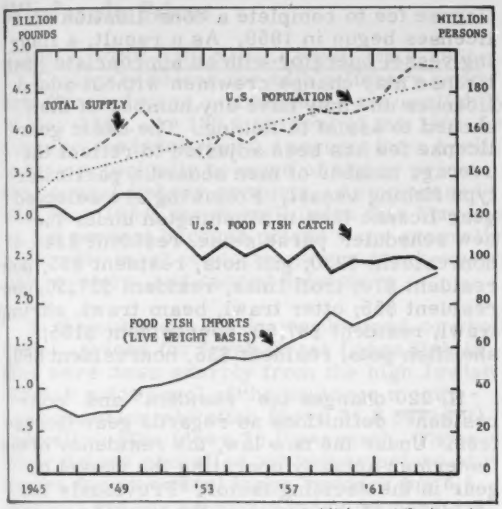


Fig. 3 - Relationship of U. S. population to food fish and imports, 1945-64.

from the previous year--the second highest value on record. The 1964 landings were lower for menhaden, Atlantic herring (sardines), Pacific halibut, mackerel, tuna, shrimp, and Atlantic ocean perch. The higher value for the year was due to larger catches of Pacific salmon, blue crab and king crab, as well as higher average prices for tuna, shrimp, and sea scallops.

Canned tuna sales from the domestic pack in 1964 were up from the previous year as against a decline in imports of canned tuna. While United States tuna landings in 1964 were lower (down 5 percent) than in the previous year, more imported frozen tuna than in 1963 was canned in the United States. The domestic tuna pack in 1964 was at a record high.

Note: See Commercial Fisheries Review, April 1965 p. 38.

U. S. Fishing Vessels

PAMPHLET ON RULES OF THE ROAD ISSUED BY COAST GUARD:

A pamphlet titled "Fishing Vessel Rules of the Road" has been issued by the U. S. Coast Guard. The new rules are based on the revised international rules that become effective September 1, 1965.

The new rules make substantial changes in light requirements, fog-signal procedures,

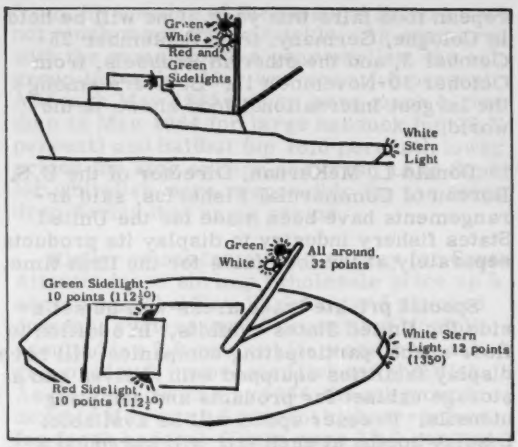


Illustration from booklet. Shows lights for vessels trawling (dragging of a dredge, net, or other apparatus through the water).

and other important aspects of Rules of the Road for fishing vessels on the high seas. Fishermen are urged by the Coast Guard to familiarize themselves with these rules before they become effective.

U. S. Foreign Trade

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-May 1, 1965, amounted to 9,599,442 pounds (about 457,116 standard cases), according to preliminary data compiled by the U. S. Bureau of Customs. That was a decline of 18 percent from the 11,744,881 pounds (about 559,300 standard cases) imported during January 1-May 2, 1964.

The quantity of tuna canned in brine which can be imported into the United States during the calendar year 1965 at the 12½-percent rate of duty is limited to 66,059,400 pounds (or about 3,145,685 standard cases of 48 7-oz. cans). Any imports in excess of that quota will be dutiable at 25 percent ad valorem.

* * * * *

U. S. FIRMS INVITED TO PARTICIPATE IN LEADING FOOD FAIRS OF EUROPE:

Plans have been announced to include United States processed fishery products among items vigorously promoted at two major Eu-

ropean food fairs this year. One will be held in Cologne, Germany, from September 25-October 3, and the other in Brussels, from October 30-November 14. Both are among the largest international food shows in the world.

Donald L. McKernan, Director of the U.S. Bureau of Commercial Fisheries, said arrangements have been made for the United States fishery industry to display its products separately at the food fairs for the first time.

Special private trade areas will be set aside for United States exhibits. In addition to floor space, participating companies will have display facilities equipped with shelves and a storage cabinet for products and sampling utensils. Freezer space will be available. Display booths at each fair will surround a lounge where American representatives can meet with potential European customers. A full-time industry representative must be available at each exhibit.

Operation of the special trade areas will be similar to procedures followed at processed food exhibits held in United States Trade Centers abroad. The private trade areas are not open to the public.

Both of these fairs will stress processed food products. Any domestic firm, handling processed fishery products, will be eligible to participate. The fishery products to be displayed, however, must have been processed in the United States.

Each U. S. firm will be required to provide, at its expense, a full-time representative, either from the United States or abroad. Also, each company will be responsible for the expense involved in shipping its products to the food fair.

Washington

NEW 1965 STATE LAWS AFFECTING FISHERIES:

Following is a report from the Fishermen's News, Vol. 27, No. 7, on fisheries bills which were passed by the Washington State Legislature and signed into law by the Governor in 1965:

S. 252 abolishes the personal license and fee of $10. That fee has been absorbed in the gear license fee to complete a consolidation of licenses begun in 1959. As a result, a fishing vessel operator with an appropriate gear license may change crewmen without added licenses and may have any number of men aboard to assist in fishing. The basic gear license fee has been adjusted to reflect the average number of men aboard a particular type fishing vessel. Following are selected gear license fees in Washington under the new schedule: purse seine, resident $145, nonresident $230; gill nets, resident $35, nonresident $70; troll lines, resident $27.50, nonresident $55; otter trawl, beam trawl, shrimp trawl, resident $87.50, nonresident $135; shellfish pots, resident $35, nonresident $60.

H. 220 changes the "resident" and "nonresident" definitions as regards gear license fees. Under the new law, the residency of the fishermen actually operating the vessel or gear is the deciding factor. Previously the residency of the owner of the vessel or gear has been the determining factor.

S. 265 defines the primary market value of fishery landings as it relates to a base price to be used in applying the ad valorem 2 percent and 1 percent privilege and catch fees. Primary market value is defined as the ex-vessel or dockside price at all landing ports in the State and includes advance prices as well as final settlements. It does not include vessel or owner subsidies.

H. 219 redefines the fish buyer's license requirements to include all persons who purchase or receive fish at places other than the employer's business premises.

H. 218 redefines wholesale license provisions.

H. 217 redefines the Lummi Island reef net areas.

H. 216 abolishes the $5 hard-shell clam license and provides that hard-shell clams may only be dug for commercial purposes on licensed clam farms. (Hard-shell clams may still be dug commercially on Indian reservations.)

Wholesale Prices

EDIBLE FISH AND SHELLFISH, MAY 1965:
Wholesale prices for edible fishery products (fresh, frozen, and canned) were up slightly in May 1965. At 109.2 percent of the 1957-59 average, the index rose 0.4 percent from April to May principally because of higher prices for several fishery products. As compared with May 1964, the overall index this May was up 3.6 percent because prices were generally higher for most products, except fresh-water fish, oysters, and canned salmon.

In the subgroup for drawn, dressed, or whole finfish, prices for fresh Great Lakes fish in May were down sharply from the high Jewish Holiday price level of the previous month--Lake Superior whitefish (down 31.8 percent) and yellow pike (down 35.0 percent). Those lower prices cancelled out higher prices at Boston for ex-vessel large haddock (up 6.5 percent) and the subgroup index dropped 4.4 percent from April to May. Prices for western halibut and salmon in May 1965 were unchanged from the previous month. Supplies of those species in May were still mostly frozen because market receipts of the fresh product from the opening of the seasonal fishery were not much more than a trickle. As compared with the same month a year earlier, the subgroup index this May was down 1.3 percent. Although May 1965 prices were much higher than in May 1964 for large haddock (up 22.3 percent) and halibut (up 18.0 percent), lower prices for king salmon and fresh Lake Superior whitefish were responsible for the index drop during that same period.

Higher prices from April to May for South Atlantic fresh shrimp (wholesale price up 5 cents a pound) at New York City and shucked standard oysters (up 3.7 percent) at Norfolk resulted in a 3.8-percent increase in the subgroup index for processed fish and shellfish. As compared with May 1964, the subgroup index this May was 1.5 percent higher--prices for fresh haddock fillets were 12.0 percent higher, for shrimp up 6 percent, but for shucked oysters were down by 5.0 percent.

Wholesale prices at Chicago for frozen shrimp dropped 1.6 percent from April to May as against higher prices for frozen flounder and haddock fillets. The May 1965 subgroup index for processed frozen fish and shell-

Wholesale Average Prices and Indexes for Edible Fish and Shellfish, May 1965 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1957-59=100)			
			May 1965	Apr. 1965	May 1965	Apr. 1965	Mar. 1965	May 1964
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					109.2	108.8	108.3	105.4
Fresh & Frozen Fishery Products:					112.9	113.3	112.5	107.4
Drawn, Dressed, or Whole Finfish:					106.1	111.0	110.8	107.5
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.10	.09	74.0	69.5	87.4	60.5
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.41	.41	119.8	119.8	117.3	101.5
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.83	.83	115.3	115.3	115.3	127.8
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.58	.85	86.6	126.9	93.3	92.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.85	1.00	106.4	163.7	139.2	94.2
Processed, Fresh (Fish & Shellfish):					118.9	114.5	112.3	117.2
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.33	.35	80.2	85.0	97.1	71.6
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.05	1.00	123.0	117.2	111.3	116.0
Oysters, shucked, standards	Norfolk	gal.	7.13	6.88	120.2	115.9	115.9	126.5
Processed, Frozen (Fish & Shellfish):					109.4	109.5	109.3	94.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.37	98.8	93.8	95.0	92.5
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.38	.37	109.9	108.5	112.9	104.1
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.30	.30	105.2	105.2	108.7	105.2
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.93	.94	109.7	111.5	108.5	88.3
Canned Fishery Products:					103.0	101.2	101.3	102.2
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	21.00	20.25	91.5	88.3	89.3	97.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.56	11.44	102.6	101.6	101.6	102.1
Mackerel, jack, Calif., No.1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.13	7.13	120.9	120.9	120.9	108.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	10.25	10.25	131.5	131.5	128.3	113.7

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

fish dropped only slightly (down 0.1 percent) as a result. As compared with May 1964, the index this May was up 15.5 percent because of much higher prices for frozen shrimp (up 24.2 percent) and several frozen fillet items. But prices for ocean perch fillets were the same as in May 1964.

The May 1965 index for canned fishery products rose 1.8 percent from the previous month. The market outlook for canned pink salmon appeared good, stocks continued to move well, and prices were up 3.6 percent from a month earlier. Average prices for canned tuna (up 1.0 percent) were up slightly from April to May because of a nominal increase in prices for tuna packed under private label but prices for advertised brands were unchanged from the previous month. Prices paid by California canneries for ex-vessel tuna were higher during May. The subgroup index in May 1965 was up 0.8 percent from the same month a year earlier because of higher prices for all canned fish except salmon (down 5.7 percent).

SPACE AGE SALMON SALAD SERVED ASTRONAUT

A 238-calorie portion of freeze-dried salmon salad was included on the space menu of Astronaut James A. McDivitt during the Gemini 4 flight in June 1965. The salmon salad was one of the items specially chosen by McDivitt, who is reported to be a seafood connoisseur. Cost of a space meal is about $255.

The salmon salad was served as a supper accompanied by pea soup, toast, fruit cocktail, and orange juice. All the food is freeze-dried, compressed, and dehydrated; it must be reconstituted with water. McDivitt and his co-Astronaut Edward H. White II picked out the food they wanted after trying out all the items available. White did not pick a fish dish. (The Evening Star, Washington, D. C., June 5, 1965.)

CORRECTION

The April 1965 issue, page 22, in the table "U. S. Supply of Fish Meal and Solubles, 1963-64," the item under domestic production shown as "herring, Alaska," should simply read "herring."

International

FISH MEAL

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY-FEBRUARY 1965:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Chile, Angola, Iceland, Norway, Peru, and South Africa/South-West Africa.

Table 1 - Exports of Fish Meal by Member Countries of the FEO, Jan.-Feb. 1965

Country	February		Jan.-Feb.	
	1965	1964	1965	1964
	. . . .(1,000 Metric Tons). . . .			
Chile	6.2	13.9	15.2	25.7
Angola	1/	2.9	1/	7.7
Iceland	6.0	8.5	15.6	20.0
Norway	12.5	13.5	25.7	40.7
Peru	130.2	100.7	295.1	202.6
So. Africa (including S.-W. Africa)	4.6	11.2	15.9	24.7
Total	159.5	150.7	367.5	321.4

Table 2 - Production of Fish Meal by Member Countries of the FEO, Jan.-Feb. 1965

Country	February		Jan.-Feb.	
	1965	1964	1965	1964
	. . . .(1,000 Metric Tons). . . .			
Chile	10.9	21.3	23.7	43.1
Angola	1/	4.0	1/	9.5
Iceland	5.0	6.5	9.2	12.3
Norway	18.7	6.4	24.6	15.0
Peru	122.3	125.2	316.4	320.8
So. Africa (including S.-W. Africa)	22.6	16.4	21.3	30.4
Total	179.5	179.8	395.2	431.2

1/Data not available.

Peru accounted for about 80 percent of the 367,500 metric tons of fish meal exported by FEO countries in January-February 1965.

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WORLD PRODUCTION, FEBRUARY 1965:

World fish meal production in February 1965 was down about 15 percent from the previous month due in large part to a labor dispute in Peru which reduced output. The decline was partly offset by higher production in Norway, Canada, Denmark, and South Africa.

World fish meal production in January-February 1965 was down slightly from that in the first 2 months of 1964. Output in early 1965 was down noticeably in Chile, but production was up in Norway, Canada, and Denmark.

World Fish Meal Production by Countries, February 1965 with Comparisons

Country	Feb.		Jan.-Feb.	
	1965	1964	1965	1964
	. . . . .(Metric Tons).			
Canada	9,233	3,368	14,674	6,773
Denmark	8,929	2,408	14,816	11,207
France	1,100	1,100	2,200	2,200
German Fed. Rep.	5,543	6,390	10,178	13,147
Netherlands	363	600	638	1,400
Spain	1/	1/	1/	1/
Sweden	1,067	415	1,657	1,485
United Kingdom	7,777	6,954	15,036	14,690
United States	1,994	1,663	4,399	3,382
Angola	1/	4,036	1/	9,584
Iceland	4,967	6,521	9,167	12,257
Norway	18,714	6,410	24,608	15,017
Peru	122,285	125,216	316,389	320,767
So. Afr. (including S.-W. Afr.)	22,712	16,947	31,456	31,249
Belgium	375	375	750	750
Chile	10,890	21,270	23,745	43,118
Morocco	-	590	-	860
Total	215,949	204,263	469,713	487,866

1/Data not available.
Note: Japan does not report fish meal production to the International Association of Fish Meal Manufacturers at present.

Most of the principal countries producing fish meal submit data to the International Association of Fish Meal Manufacturers monthly (see table).

International (Contd.):

FOOD AND AGRICULTURE ORGANIZATION

8TH ANNUAL SESSION OF THE GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN:

The 8th Annual Session of the General Fisheries Council for the Mediterranean (GFCM) was held in Rome, May 10-15, 1965. Some 60 fisheries experts from 14 Mediterranean countries participated.

Major items on the agenda included the possibility of establishing a regional United Nations Special Fund project for the further development of the Mediterranean's fisheries. Another important topic was a synopsis, prepared jointly with the International Commission for the Scientific Exploration of the Mediterranean Sea, on the oceanography of the Mediterranean, and the launching of a possible Mediterranean-wide sardine-tagging program. The sardine is of significant commercial importance to the fishing nations of the Mediterranean. Tagging is a basic tool for determining the growth, distribution, migration habits, mortality rate, stock, and population size of that species.

The GFCM has already sponsored a good deal of work on sardine-tagging, including a seminar held in 1964, in Split, Yugoslavia. If a Mediterranean-wide sardine-tagging program were launched, it would be the first of its kind carried out in the region.

About 55 technical and 25 working papers, covering all phases of present Mediterranean fishing problems, were presented during the Session. All of the papers were discussed in the Council's five technical committees.

Member nations of GFCM are France, Greece, Israel, Italy, Lebanon, Libya, Monaco, Morocco, Spain, Tunisia, Turkey, the United Arab Republic, the United Kingdom, and Yugoslavia. (Food and Agriculture Organization, Rome, May 4, 1965).

Note: See Commercial Fisheries Review, January 1965 p. 56.

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PLAN FOR FUTURE DEVELOPMENT OF MEDITERRANEAN FISHERIES URGED:

Views on the fertility of the Mediterranean Sea are varied and often contradictory, said the Director of the Fisheries Division, Food and Agriculture Organization (FAO), at the opening session of the General Fisheries Council of the Mediterranean, held in Rome, May 10-15, 1965.

"The Mediterranean is for some people a very poor sea which cannot support a rewarding fishery," he added as he called on the Mediterranean nations to draw up a general plan for the future development of that Sea's fishing resources. He pointed out that some stocks have been overexploited and that they are in a very advanced overfished state. On the other hand, he also pointed out that some optimistic views have been expressed on the existence of other fish stocks that can support much more substantial fisheries than they do now.

According to the FAO Fisheries Division director, the GFCM can play a central part in determining just what the Mediterranean's fishing potential really is. Immediate needs are the collection and analysis of existing oceanographic information, improved knowledge of the kinds and abundance of fish, more efficient fishing and processing methods, and better management.

The task of developing the Mediterranean's fisheries is too big to be undertaken by individual nations. Any successful development would have to be carried out under a unified plan, developed and executed through the GFCM. The best means of carrying out such a general development plan would probably be through an integrated series of fisheries projects designed to meet the needs of individual countries as well as the Mediterranean generally.

The Fisheries Division chief told delegates at the opening session that aid in financing a

International (Contd.):

general program could be sought through the United Nations Special Fund, the United Nations Expanded Program of Technical Assistance, the World Bank, or through bilateral aid programs integrated into an overall plan, and that the FAO would be willing to aid the GFCM in seeking such assistance.

At the opening meeting, Spain's Director General of Fisheries and Chairman of the GFCM's 8th Annual Session said he had no doubt that, through modern scientific methods, Mediterranean fishing could be developed far beyond its present productivity. He added, "There are still many unharvested areas of our Sea. What we need is more research and experimental fishing expeditions to determine the size of the marine resources and their substainable yield. This can only be acccomplished through unity and cooperation." (Food and Agriculture Organization, Rome, May 10, 1965.)

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EIGHTH REGIONAL CONFERENCE FOR LATIN AMERICA:

The Food and Agriculture Organization (FAO) held its Eighth Regional Conference for Latin America in Vina del Mar, Chile, March 13-29, 1965.

The Conference passed five resolutions of importance to Latin American fisheries. (These conferences serve, among other things, as forums wherein the countries of an FAO Region may exchange information and consult on common problems.) The five resolutions on fisheries favored:

1. Establishment of a regional freshwater fisheries institute in Bolivia.
2. More work by FAO to find a way of processing fish meal in a form suitable for human consumption.
3. Preparation of an international convention for the rational exploitation of Atlantic tuna.
4. Establishment of a South Pacific regional fisheries advisory commission.
5. More attention to the discovery and development of fishery resources, assessment of stocks, research on fishery biology, more training, improved processing, stronger fishery administrative services, and strengthening of international cooperation.

In connection with the last resolution, the Conference supported the FAO Director-General's proposal to strengthen FAO's role in fisheries, and establish an FAO Fisheries Department.

* * * * *

SEATTLE MAN APPOINTED CHAIRMAN OF 3RD TECHNICAL MEETING OF FISHING BOATS TO BE HELD IN SWEDEN:

George C. Nickum of Seattle, Wash., was named Chairman of the 3rd International Technical Meeting on Fishing Boats which will be held at Goteborg, Sweden, October 23-29, 1965. The announcement was made by the Fisheries Division, Food and Agriculture Organization (FAO), which is sponsoring the meeting jointly with the Swedish Government.

Nickum is Managing Director and President of one of the three largest firms of consulting naval architects in the United States. He is a member of FAO's Panel of Fisheries Experts; the U. S. Society of Naval Architects and Marine Engineers, and former chairman of its Pacific Coast Section; the British Royal Institution of Naval Architects; and a member of the British Northeast Coast Institution of Engineers and Shipbuilders.

The chief of FAO's Fishing Boat Section and Secretary for the forthcoming Goteborg meeting says Nickum "has been responsible for a wide variety of ship designs, from amphibians to floating drydocks, from hydrofoils to destroyer escorts, from ferries to fish factoryships, and from oceanographic vessels to offshore oil rigs, not to mention fishing vessels of many classes."

The main theme of the Goteborg meeting will be the needs of developing countries for small fishing craft--boats under 100 gross tons--especially adaptable for fishing their own national waters. (Food and Agriculture Organization, Rome.)

Note: See Commercial Fisheries Review, May 1965 p. 50.

LAW OF THE SEA

CERTAIN INTERNATIONAL CONVENTIONS RATIFIED BY FINLAND:

On February 16, 1965, Finland deposited her ratifications of the four Conventions formu-

International (Contd.):

lated by the 1958 United Nations Conference on the Law of the Sea. Those Conventions are the (1) Convention on the Territorial Sea and the Contiguous Zone; (2) Convention on the High Seas; (3) Convention on the Continental Shelf; and (4) Convention on Fishing and Conservation of the Living Resources of the High Seas. The first three of those Conventions have entered into force, and the latter has at least 18 of the 22 ratifications needed to enter into force.

Note: See Commercial Fisheries Review, May 1965 p. 55; Mar. 1965 p. 83; Jan. 1965 p. 59; Dec. 1964 p. 39; Nov. 1964 p. 70; Oct. 1964 p. 49; June 1961 p. 90; May 1960 p. 40.

OCEANOGRAPHY

INTERNATIONAL CONFERENCE ON TROPICAL OCEANOGRAPHY:

An International Conference on Tropical Oceanography will be held at Miami Beach, Fla., November 18-24, 1965. The meetings are sponsored by the Institute of Marine Science, University of Miami, and will coincide with the Institute's 21st birthday and the formal dedication of its entire Virginia Key campus. It is expected that the new marine laboratory of the U. S. Bureau of Commercial Fisheries, at an adjacent site on Virginia Key, will also be completed by that time.

The International Conference will reflect the increased interest in tropical oceanic areas. Research in those areas has been intensified during the past few years. Some of the papers to be presented will deal with scientific results of the International Indian Ocean Expedition (IIOE) and the International Cooperative Investigations of the Tropical Atlantic (ICITA), and will constitute important contributions to knowledge of the sea. Ten symposia to be held at the conference will deal with circulation, carbonate, ecology, tectonics, deep-sea biology, zoogeography, behavior, nutrient cycles, economics, and high-sea fisheries.

The meetings will be held in cooperation with the Gulf and Caribbean Fisheries Institute (Nov. 15-19) and the International Game Fish Association (November 12 and 13). Delegates from all over the world are expected to attend the conference. (News of Institute of Marine Science, Miami, Fla., March 24, 1965.)

RADIATION PRESERVATION

EUROPEAN STUDIES OF RADIATION PRESERVATION OF FISHERY PRODUCTS:

Following is a report from Food Irradiation, July-December 1964, on certain European studies concerning fishery products:

France: The varied factors affecting the shelf life of fish after irradiation are being studied. Irradiation preservation of whole fish and gutted fish as well as fish fillets is being investigated. The influence of various packing methods on irradiation procedures is also being studied.

West Germany: The German Federal Government plans to establish a research center at Karlsruhe to study food irradiation. In the meantime, a number of irradiation study projects are being conducted with available facilities. Work is being done on dosimetry problems as well as on the possibility of sensitization of micro-organisms. Other studies are aimed at finding ways of determining whether or not a product has been irradiated. One indicator found by German scientists is the surface changes in plastic coverings for prepacked foods which have been irradiated.

The Battelle Institute of Germany is studying ways to extend the shelf life of vinegar-pickled herring by substituting irradiation for preservatives. The first part of the project, which was begun in September 1963, has been devoted to microbiological and analytical investigations of the influences of irradiation and of storage. Wholesomeness and feasibility studies will be made in the second phase of the project.

Italy: An irradiation study of fresh and frozen fishery products in demand on the Italian market is being carried out jointly by the Perugia Radiobiological Center and the Pescara Veterinary Institute for Hygienic Control of Fish Products. Under this program, shrimp, cod, lemon sole, and other species are treated with an irradiation of 0.3 Mrad and then tested for: (1) bacteria which develop at the temperature of melting ice and at room temperature, (2) volatile amines and peroxides, and (3) flavor, odor, and appearance.

Italian studies are also being carried out on irradiation control of salmonella and other

International (Contd.):

bacteria in such animal-feeding stuffs as fish meal. Besides bacteriological tests, chemical tests are applied to irradiated meals to determine if changes have taken place in their amino acids and "protein relative value."

Netherlands: Irradiation of fish meal to eliminate salmonella is being studied by the CIVO Institute.

Norway: Irradiation research in Norway is limited by a lack of facilities, but there is a growing interest in the possibility of irradiation preservation of foods, particularly fishery products.

Note: In the United States, the U. S. Bureau of Commercial Fisheries is operating an irradiation facility at Gloucester, Mass., under an agreement with the Atomic Energy Commission to investigate the pasteurization of fishery products. For additional information on United States studies, see Commercial Fisheries Review, Dec. 1964 p. 57 and Nov. 1964 p. 54.

WHALING

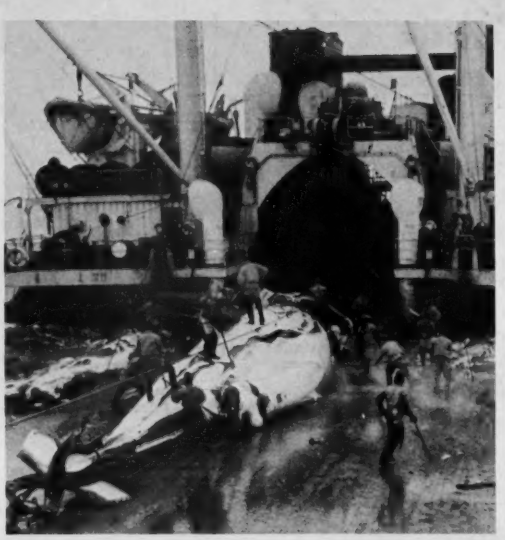
ANTARCTIC INTERNATIONAL QUOTA CUT RECOMMENDED:

Delegates from 12 nations, at the conclusion of a special 4-day International Whaling Conference in London, May 3-6, 1965, approved a resolution recommending that the international quota for the 1965/66 Antarctic whaling season be reduced to 4,500 blue-whale units (each unit is calculated to equal 2 fin whales, or 2½ humpback whales, or 6 sei whales).

The resolution, which was addressed to Governments of countries belonging to the International Whaling Commission, also recommended Antarctic quota reductions in the succeeding two seasons. It was recommended that by 1967/68 the catch quota should not exceed the maximum sustainable yield. That would give the depleted whale herds in the Antarctic a chance to begin their recovery.

The recommendations were to be considered by the International Whaling Commission at its 17th Annual Meeting scheduled to open in London, June 28, 1965. At its 17th Annual Meeting, the Commission also planned to hear from a special scientific committee set up to assess the condition of North Pacific whale stocks.

Last year, at its 16th Annual Meeting in June 1964, the International Whaling Commission was unable to agree on a quota for the Antarctic. By informal agreement, the active



Cutting up a whale for processing aboard a Japanese whaling factoryship in the Antarctic.

Antarctic whaling countries (Japan, U.S.S.R., and Norway) established a 1964/65 quota of 8,000 blue-whale units, of which only 6,984 were actually caught. Giving weight to conservation arguments has been the striking decline in the Antarctic whale catch from 8,428 blue-whale units in 1963/64 and 11,299 units in 1962/63. (News of Norway, May 13, 1965, and unpublished sources.)

Note: See Commercial Fisheries Review, June 1965 p. 44; April 1965 p. 74; Sept. 1964 p. 54.

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INTERNATIONAL WHALING CONVENTION AMENDED:

Amendments to paragraphs 2, 4(1), 6(3), 9(a), and 9(b) to the schedule to the International Whaling Convention of 1946 entered into force October 1, 1964, with the exception of paragraph 6(3), which entered into force January 22, 1965, except for Japan, Norway, the U.S.S.R., and the United Kingdom.

The amendments were adopted at the 16th annual meeting of the International Whaling Commission which was held June 22-26, 1964, in Sandefjord, Norway.

Note: See Commercial Fisheries Review, Sept. 1964 p. 54.

Angola

FISH OIL PRODUCTION AND EXPORTS, 1963-1964 AND OUTLOOK FOR 1965:

Fish oil production in Angola is estimated to have increased from 3,579 metric tons in 1963 to 5,000 tons in 1964. A forecast calls for an output of 8,000 tons of fish oil by the Angola reduction industry in 1965. (Editor's Note: A Government loan project to help modernize Angola's fish reduction industry is said to include plans to equip fish meal plants for full extraction of fish oil.)

Angola's Exports of Fish Oil, 1963-1064

Country of Destination	1964	1963
	(Metric Tons)	
Netherlands	4,731	2,193
West Germany	1,434	451
France	902	-
Portugal	283	478
Spain	29	-
Total	7,379	3,122

Angola's exports of fish oil increased from 3,122 tons in 1963 to 7,379 tons in 1964, due to larger shipments to the Netherlands, West Germany, and France. (Agricultural Attache, United States Embassy, Leopoldville, May 6, 1965.)

Note: See Commercial Fisheries Review, June 1965 p. 45 and Feb. 1965 p. 84.

Argentina

FISH MEAL AND OIL PRODUCTION AND EXPORTS, 1962-1964:

Fish Meal: Production of fish meal in Argentina from salt-water fish increased from about 3,000 metric tons in 1962 to over 10,000 tons in 1964. Much of the increase was taken by the domestic mixed feed industry. Argentine exports of fish meal declined in 1964 to a level only a little above that in 1962.

Argentina's Production and Exports of Fish Meal and Oil, 1962-1964

Item	1/1964	1963	1962
	(Metric Tons)		
Production:			
Fish meal:			
Salt-water	10,600.4	6,636.3	3,248.0
Fresh-water	1,299.3	1,418.9	1,273.0
Fish oil:			
Fish-body oil	1,512.6	1,135.8	718.5
Shark-liver oil	2/	63.1	0.7
Export:			
Fish oil	576.6	472.1	383.3
Fish meal	1,867.2	3,978.0	1,584.4

1/Preliminary.
2/Not available.

Fish Oil: Although showing some increase, Argentine output of fish oil has not kept up with the rapid expansion in meal production. In 1964, Argentine fish oil production totaled 1,512 tons and exports amounted to 576 tons. (Agricultural Attache, United States Embassy, Buenos Aires, April 26, 1965.)

Note: See Commercial Fisheries Review, Aug. 1964 p. 54.

British Honduras

FISHERY TRENDS, EARLY 1965:

The fisheries center at Belize City in British Honduras annually prepares about 400,000 pounds of frozen spiny lobster tails for export, mainly to the United States. The spiny lobsters are taken mainly in shallow coastal waters off British Honduras, and overfishing is viewed with some concern by the Government. The resource has been the subject of several surveys and studies.

As regards fisheries potential, the reefs and keys off British Honduras are said to offer good fishing for snapper and other fish. Export markets for finfish are being sought.

Note: See Commercial Fisheries Review, Oct. 1963 p. 45.

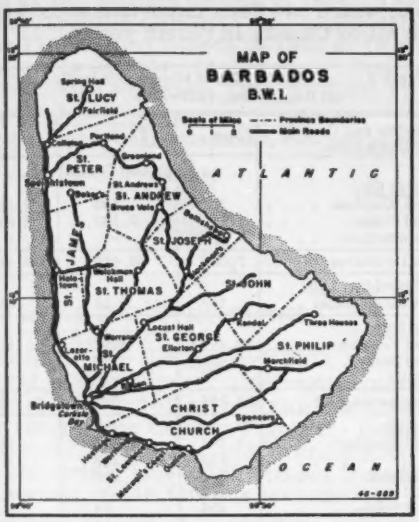
British West Indies

BARBADOS SHRIMP FISHERY TRENDS, 1964:

The United States-owned shrimp processing company established in Barbados continued to expand its local operations in 1964 and now has a fishing fleet of 25 to 30 trawlers. During 1964 the firm exported 1.5 million pounds of frozen shrimp, nearly all to the United States.

The firm's expansion plans now call for an eventual fleet of 50 trawlers, rather than the 100 vessels anticipated earlier. The problem of expanding the government-controlled freezing and storage facilities to keep abreast with a steadily increasing trawler fleet has not been completely resolved. The government-controlled Barbados Marketing Corporation is reluctant to expand those facilities without adequate assurance that the shrimp-processing firm will remain in Barbados for a considerable period of time. The enterprise,

British West Indies (Contd.):



however, has attracted the interest of local conservative businessmen who are willing to underwrite further expansion should the Government default. It is anticipated that 2 million pounds of frozen shrimp will be exported during 1965. Should the trawler fleet increase to the anticipated total of 50 vessels during the year, shrimp exports could rise to between 3.5 million to 4.5 million pounds. A 50-vessel fleet would provide employment for over 500 Barbadians. (United States Consulate, Barbados, April 28, 1965.)

Note: See Commercial Fisheries Review, July 1964 p. 47.

Canada

SWORDFISH AND TUNA STUDY IN THE SOUTH ATLANTIC AND CARIBBEAN AREA:

In a study designed to help Canadian east coast fishermen extend their seasonal fishery for swordfish and tuna, the Canadian research vessel Hudson began a South Atlantic and Caribbean cruise in February 1965. Aboard the vessel were biologists from the Canadian Fisheries Research Board Biological Station at St. Andrews, N.B., and cooperating biologists from other institutions, including the Woods Hole (Mass.) Oceanographic Institute. In an effort to explore the southern habitat of swordfish and tuna, biologists aboard the Hudson planned to begin their investigations just south of Cape Hatteras and then follow the Gulf Stream to the West Indies. Work was to include biological sampling to determine spawning seasons and areas, habits, and distribution patterns. The cruise was to extend as far south as 12° N. latitude in the eastern Caribbean Sea.

The Canadian catch of swordfish and tuna has grown markedly in the past few years. In 1964, 12 million pounds of swordfish caught by Nova Scotia fishermen were valued at $3.5 million. The Nova Scotia tuna catch totaled 2.5 million pounds.

However, the catch is seasonal, extending from May to September, and is made on the edge of the Continental Shelf off Nova Scotia. There is evidence that in September the tuna and swordfish migrate to southern waters. A knowledge of those areas and of the habits of the fish could aid Canadian fishermen. Canadian vessels already fish as far south as Cape Hatteras.

The Caribbean cruise is the most southern trip yet taken by the Hudson, the new floating laboratory of the Marine Sciences Branch of the Canadian Department of Mines and Technical Surveys.

Use of the vessel by the Fisheries Research Board illustrates the cooperative effort in oceanography among Canadian agencies represented on the Canadian Committee on Oceanography, which coordinates and directs Canada's effort in oceanographic research. (Canadian Fisherman, March 1965.)

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FISH MEAL AND OIL EXPORTS, 1963-64:

Canadian exports of fish meal, largely herring, were up 12 percent in 1964 from the previous year.

Canadian Exports of Fish Meal and Oil, 1963-64

Item	1/1964	1/1963
	. . .(Short Tons) . . .	
Fish meal:		
Herring	50,498	45,150
Other	11,992	10,404
Total	62,490	55,554
Fish oil & fish-liver oil:		
Cod-liver	3,482	5,233
Herring, industrial	11,646	474
Total	15,128	5,707

1/Preliminary.

Canada (Contd.):

With sharply higher prices on the world fish oil market, Canadian exports of herring oil in 1964 recovered from the extremely low level of 1963. But shipments of cod-liver oil were down in 1964. (Foreign Agriculture, April 26, 1965, U. S. Department of Agriculture.)

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MARINE-OIL PRODUCTION, USE, AND FOREIGN TRADE, 1963-1964:

Highlights of the Canadian marine oil industry in 1964 were a sharp rise in exports and, by contrast, an even sharper drop in imports. Major factors affecting the industry in 1964 were rising prices for marine oil and shifts in use of marine oil by the margarine industry.

Table 1 - Canadian Production of Marine Oils, 1962-1964 and Average for 1956-60

Item	1/1964	2/1963	1962	5 Yr. Average 1956-1960
	(1,000 Pounds)			
Atlantic3/	13,770	11,757	10,792	13,146
British Columbia (herring oil)4/	44,545	52,843	41,031	29,552
Total	58,315	64,600	51,823	42,698

1/Preliminary.
2/Revised.
3/Consists mainly of body oil and liver oil from groundfish species, herring, and seals.
4/Consists entirely of herring oil.
Note: Production data converted to pounds using the factor 9.3 pounds equal 1 imperial gallon.

Canada's herring oil exports were up from about 1 million pounds in 1963 to over 23 million pounds in 1964 (including over 19 million pounds to the United Kingdom and almost 4 million pounds to the United States). Total Canadian marine-oil exports increased from 17.6 million pounds in 1963 to 34.7 million pounds in 1964.

Table 2 - Canadian Imports of Marine Oils, 1963-1964

Country of Destination	1/1964	2/1963
	(1,000 Pounds)	
United States	626	12,543
Iceland	-	11,864
United Kingdom	212	614
Norway	242	255
Other countries	12	582
Total	1,092	25,858

1/Preliminary.
2/Revised.

By contrast, Canadian imports of marine oil fell from over 25 million pounds in 1963 to only about 1 million pounds in 1964. The cutback mainly affected the United States and Iceland, which had been important suppliers of fish oil to Canada in recent years.

Table 3 - Canadian Exports of Marine Oils by Country of Destination, 1962-1964

Commodity and Country of Destination	1/1964	2/1963	1962
		(1,000 Pounds)	
Cod-Liver Oil:			
United Kingdom	3/	1,330	1,288
United States	3/	9,136	4,900
Other countries	3/	-	-
Total cod-liver oil	7,000	10,466	6,188
Other Fish-Liver Oils:			
Total all countries	162	12	34
Herring Oil:			
United Kingdom	19,459	911	-
United States	3,807	36	88
Australia	25	-	-
Total herring oil	23,291	947	88
Whale Oil:			
United Kingdom	1,344	1,726	593
Italy	739	2,228	-
Netherlands	-	896	-
Australia	673	-	-
United States	405	60	-
Other countries	-	8	667
Total whale oil	3,161	4,918	1,260
Other Marine Oils:			
United States	1,113	1,302	126
Other countries	-	-	20
Total other marine oils	1,113	1,302	146
Total marine oil exports	34,727	17,645	7,716

1/Preliminary.
2/Revised.
3/Breakdown not available.

Total domestic production of marine oil in Canada in 1964 was down about 10 percent from the previous year. The decline was due to lower output of British Columbia herring oil (down 16 percent in 1964). Canadian herring oil prices began rising in the fourth quarter of 1964, reaching a high in December of 13.1 Canadian cents a pound f.o.b. Toronto. Earlier in the year, herring oil prices at Toronto had held fairly steady at about 10.7 cents a pound.

Trends in the margarine industry have an important bearing on marine-oil trade, since marine oil can be substituted for vegetable oil in both margarine and shortening. The striking increase in herring oil exports to the United Kingdom was probably due to its increased use in British margarine. (Canadian exports of soybean oil to the United Kingdom dropped in 1964.) On the other hand, the reverse of that process was seen in the Canadian domestic industry where use of marine oil in margarine dropped from 64.5 million pounds in

Canada (Contd.):

1963 to 29.7 million pounds in 1964. The use of marine oil in Canadian shortening dropped from 22.9 million pounds in 1963 to 13.5 million pounds in 1964. (Agricultural Attache, United States Embassy, Ottawa, April 17 and 22, 1965.)

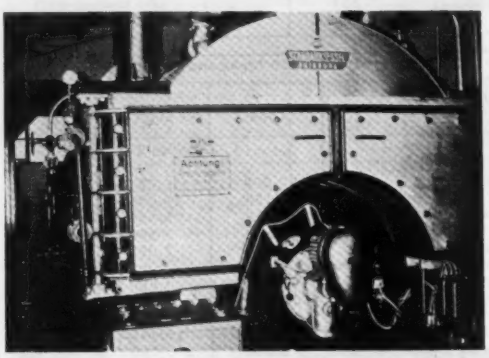
Note: See Commercial Fisheries Review, Dec. 1964 p. 84, Aug. 1964 p. 56.

Chile

FISH MEAL INDUSTRY TRENDS, FIRST QUARTER 1965:

Despite poor fishing during the latter part of 1964, Chilean production and exports of both fish meal and oil set new records in 1964. According to the Chilean Fisheries Development Institute, production of fish meal totaled 156,638 metric tons (up 69 percent from 1963) and exports of 146,450 tons exceeded the previous year's level by 70 percent. Fish oil production in 1964 was 16,177 tons and exports totaled 1/ 12,568 tons, up 28 percent and 7 percent, respectively, from the preceding year.

An anchoveta shortage coupled with excess capacity in the Chilean reduction industry makes the 1965 outlook much less promising. Provisional data for 1965 show an anchoveta catch of 84,000 tons in January and 67,000 tons in February, a decline of more than 50 percent from the catch in the first 2 months of 1964. Reports of fish meal plants in financial crisis are increasing, and unemployment is rising in Tarapaca Province, where most of the fish meal plants are located. Shortly after the end of the first quarter of 1965, one large Iquique plant announced it was shutting down. If more abundant raw material sources are not located soon, other plants will also have to close.



Boiler room of fish meal plant in San Antonio, Chile.

Those developments are building up pressure for aid to the threatened industry. Increased attention is being given to scientific study of marine resources and to the merits of conservation, but those are long-range measures. The Production Development Corporation of Chile (CORFO) is no longer extending credits to build new fish meal plants, and the Navy has stopped granting property concessions for new plants. But those steps provide no direct relief to existing concerns. The Government is under increasing pressure to extend new loans, buy meal for future delivery, reinstitute export subsidies, declare a moratorium on principal payments due (as was recently done for ship owners), or even to take over the industry. Some new Government activity seems probable unless the elusive anchoveta return in quantity.

1/ This amount does not agree with that shown in table on p. because source is different.

Chile (Contd.):

(United States Embassy, Santiago, April 23, 1965.)

Note: See Commercial Fisheries Review, June 1965 p. 50, May 1965 p. 63.

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EXPORTS OF FISH MEAL AND OIL BY COUNTRY OF DESTINATION, 1962-1964:

Fish Meal: Expansion of the Chilean reduction industry resulted in sharply higher fish meal exports in 1964. Much of the increase went to West Germany, the Netherlands, and Belgium, the leading buyers of Chilean fish meal in 1964. But shipments to the United States were down in 1964, accounting for less than 10 percent of the total.

Chilean Exports of Fish Meal and Oil, 1962-1964

Country of Destination	1964	1963	1962
	(Metric Tons)		
Fish meal:			
Belgium	23,099	11,352	10,478
West Germany	41,186	10,026	10,191
Netherlands	38,118	8,655	15,369
France	7,855	1,850	4,025
Italy	3,500	2,050	600
Poland	2,000	2,000	2,500
Spain	1,300	8,600	4,000
United Kingdom	14,654	6,509	5,974
United States	13,103	19,757	11,771
Venezuela	370	10,363	5,962
Other countries	1,265	5,157	1,300
Total fish meal	146,450	86,319	72,170
Fish oil:			
West Germany	181	1,776	2,256
Netherlands	12,755	9,625	8,035
Other countries	822	142	618
Total fish oil	13,758	11,543	10,909

Source: Chilean Customs Office.

Fish Oil: Chilean exports of fish oil increased much less than fish meal in 1964 because of the relatively low oil yield of anchoveta during the past season. The Netherlands has taken the bulk of Chilean fish oil exports during the last 3 years. (Foreign Agriculture, U. S. Department of Agriculture, May 10, 1965.)

Cuba

TUNA FISHERIES EXPANSION:

The Fisheries Corporation of the Cuban Government plans to buy three or four tuna fishing vessels from Spain, according to a report in the Japanese periodical Asahi, April 25, 1965.

In 1963, Cuba acquired five 350-ton tuna vessels from Japan, together with the services of about 80 Japanese fishermen who came to Cuba to give technical advice. Early in 1965, about 50 of those Japanese technicians returned home. To replace those technicians and to obtain crewmen for the vessels to be ordered from Spain, the Cuban Government was reported trying to recruit another 80 Japanese fishermen.

Note: See Commercial Fisheries Review, April 1963 p. 46, Aug. 1962 p. 73.

Denmark

EXPORTS OF FROZEN FISH FILLETS AND BLOCKS AND RAINBOW TROUT, JANUARY-FEBRUARY 1965:

Denmark's exports of frozen fish fillets and blocks (mostly groundfish) during January-February 1965 amounted to 7.8 million pounds. The January 1965 exports totaled almost 3.0 million pounds; February 4.8 million pounds.

Exports of frozen rainbow trout in the first 2 months of 1965 totaled 2.7 million pounds. In January 1965 those exports were almost 1.4 million pounds; February 1.3 million pounds.

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FISHERY TRENDS, JANUARY-MARCH 1965:

Landings: Danish fishery landings in home ports by Danish fishermen during January-March 1965 were up 26 percent from the same period in 1964. Landings increased for industrial fish (up 251 percent), cod and codlike fish (up 19 percent), and herring (up 12 percent). Other important species showing increases were salmon, pond trout, and shrimp, but landings of flatfish, brisling, and Norway pout were down. During the period, there were lower direct landings in foreign ports by Danish vessels and in Danish ports by foreign vessels.

Denmark (Contd.):

Table 1 - Danish Fishery Landings, January-March 1965 and 1964

Species	Jan.-Mar. 1965	Jan.-Mar. 1964
	. . (Metric Tons) . .	
Landings in Denmark by Danish vessels:		
Flatfish 1/	10,359	13,145
Cod 2/	41,660	25,766
Herring	77,615	69,436
Brisling	792	1,868
Mackerel	274	215
Eels	54	26
Salmon	482	-
Pond trout	1,999	1,835
Other fish 3/	36,389	19,885
Mussels	4,511	4,657
Starfish	991	1,466
Shrimp, lobster, and other shellfish	1,215	1,104
Total	176,341	139,403
Landings in Denmark by foreign vessels	45,194	50,374
Landings in foreign ports by Danish vessels	291	688

1/Plaice, flounder, dab, common sole, etc.
2/Includes haddock, coalfish, hake, ling, etc.
3/Mostly industrial fish such as Norway pout, sand eels, etc.
Source: Ministry of Fisheries.

Processing: Of the fishery products processed during the first quarter of 1965, only canned fish was down in quantity from the same period a year earlier. During the first quarter of 1965, substantially more cod and cod-like fish and herring were processed as fresh or frozen fish, but production of plaice fillets was down because of lower landings of that species.

Table 2 - Danish Production of Processed Fishery Products, January-March 1965

Product	Jan.-Mar. 1965	Jan.-Mar. 1964
	. . (Metric Tons).	
Canned:		
Herring and sprats	1,142	1,395
Mackerel	64	74
Other fish	1,894	1,960
Mussels	173	184
Other shellfish	186	175
Total	3,459	3,788
Semi-preserved:		
Herring and sprats	1,467	1,225
Other fish	128	103
Mussels	158	108
Total	1,753	1,436

(Table continued on next column.)

Product	Jan.-Mar. 1965	Jan.-Mar. 1964
	. . (Metric Tons).	
Fresh and frozen fillets:		
Cod	9,892	7,281
Codlike fish 1/	868	292
Plaice	2,575	2,738
Other flatfish	326	254
Herring	15,006	10,175
Other fish	43	35
Total	28,710	20,775
Smoked:		
Herring and sprats	312	229
Mackerel	170	114
Eels	147	169
Salmon and trout	189	105
Other fish and shellfish	107	62
Total	925	679
Miscellaneous:		
Force meat 2/	533	391
Salted herring	8	4/
Dry-salted cod	154	4/
Other fishery products	360	280
Total	1,055	4/
Industrial products:		
Meal	23,686	14,511
Oil	5,651	5,316
Ensilage 3/	1,181	1,214
Solubles	1,770	1,405
Total	32,288	22,446

1/Haddock, coalfish, hake, ling, etc.
2/Ground fish, milk, and flour.
3/Chemically-treated raw fish.
4/Not available.
Source: Ministry of Fisheries.

Production of fish meal in the first quarter of 1965 was up substantially from the same period in 1964, and there was some increase in the production of fish oil as a result of heavier industrial fish landings than in the same period a year earlier. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, May 5, 1965.)

Faroe Islands

EXPORTS OF FROZEN FISH FILLETS, 1963-1964:

Faroese exports of frozen fish fillets in 1964 were down 14 percent in quantity and 4 percent in value from the previous year. Shipments to the United States, which is the leading market, totaled 807 metric tons in 1964, down only 50 tons from the previous year. But shipments in 1964 were down sharply to East Germany and there were no exports to Hungary (which took 149 tons in the previous year). The decline was partly offset by higher

Faroe Islands (Contd.):

Faroese Exports of Frozen Fish Fillets, 1963-1964

Country of Destination	1964			1963		
	Quantity	Value		Quantity	Value	
	Metric Tons	Kr. 1,000	US$ 1,000	Metric Tons	Kr. 1,000	US$ 1,000
Denmark	16	56	8.1	17	48	7.0
United States	807	2,893	419.2	857	2,783	403.3
United Kingdom	454	1,345	194.9	322	892	129.3
East Germany	158	334	48.4	485	1,025	148.5
Hungary	-	-	-	149	304	44.0
Czechoslovakia	324	641	92.9	209	433	62.8
Total	1,759	5,269	763.5	2,039	5,485	794.9

Note: Kroner 6.9 equal U$1.00.

exports to the United Kingdom and Czechoslovakia. (Faroes in Figures, No. 29 March 1965.)

Iceland

EXPORT STOCKS OF PRINCIPAL FISHERY PRODUCTS, MARCH 31, 1965:

Iceland's stocks of frozen groundfish (fillets) for export to the United States totaled 5,156 metric tons as of March 31, 1965 (see table).

Icelandic Export Stocks[1/] of Principal Fishery Products, March 31, 1965

Item	Quantity	Value	
	Metric Tons	Million Kr.	US$ 1,000
Groundfish, frozen:			
For export to:			
U. S.	5,156	113.4	2,633.5
Other countries	2,926	50.6	1,175.1
Stockfish	4,420	123.8	2,875.0
Herring:			
Salted	2/	2.9	67.3
Frozen	5,132	29.3	680.4
Industrial products:			
Fish meal:			
Herring	3,435	24.7	573.6
Other fish	8,013	34.8	808.2
Herring oil	17,871	148.3	3,444.0

1/Includes only stocks intended for export.
2/Not available.
Note: Icelandic kronur 43.06 equal US$1.00.

United States imports of frozen groundfish fillets from Iceland in the year 1964 totaled 17,812 metric tons of groundfish blocks and slabs, 4,669 metric tons of cod fillets, 2,791 metric tons of haddock fillets, and 548 metric tons of ocean perch fillets. (United States Embassy, Reykjavik, April 28, 1965.)

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EXPORTS OF FISHERY PRODUCTS, JANUARY-FEBRUARY 1965:

During January-February 1965, there was an increase in exports of dried salted fish, salted fish fillets, stockfish, canned fish, cod-liver oil, and herring oil, as compared with the same period in 1964, according to the Icelandic periodical Hagtidindi, March 1965. Exports of frozen herring, frozen fish fillets, salted herring, whale oil, fish meal, herring meal, and whale meal showed a considerable decrease in the first 2 months of 1965.

Icelandic Fishery Exports, January-February 1965 with Comparisons

Product	Jan.-Feb. 1965			Jan.-Feb. 1964		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
	Metric Tons	1,000 Kr.	US$ 1,000	Metric Tons	1,000 Kr.	US$ 1,000
Salted fish, dried	1,066	21,913	508	507	12,829	298
Salted fish, uncured	867	14,462	336	961	14,491	336
Salted fish fillets	297	5,772	134	161	2,075	48
Wings, salted	44	600	14	105	1,431	33
Stockfish	2,089	60,811	1,411	1,641	47,005	1,091
Herring on ice	-	-	-	-	-	-
Other fish on ice	6,905	42,641	989	6,672	40,840	947
Herring, frozen	5,880	37,640	873	6,743	40,434	938
Other frozen fish, whole	1,259	14,522	337	758	7,837	182
Frozen fish fillets	2,166	48,774	1,132	7,015	154,190	3,577
Shrimp and lobster, frozen	73	6,523	151	114	11,165	259
Roes, frozen	183	2,825	66	44	1,054	24
Canned fish	76	3,964	92	40	1,849	42
Cod-liver oil	1,047	11,555	268	737	7,201	167
Lumpfish roes, salted	-	-	-	1	27	1
Other roes for food, salted	-	-	-	1	18	-
Roes for bait, salted	-	-	-	-	-	-
Herring, salted	5,006	53,765	1,247	6,315	67,046	1,555
Herring oil	3,931	31,902	740	3,576	28,489	661
Ocean perch oil	-	-	-	28	188	4
Whale oil	774	6,698	155	2,101	18,675	433
Fish meal	754	4,878	113	3,620	19,004	441
Herring meal	14,823	101,935	2,365	16,831	93,483	2,169
Ocean perch meal	-	-	-	-	-	-
Wastes of fish, frozen	597	1,881	44	197	534	12
Liver meal	94	666	15	100	656	15
Lobster and shrimp meal	25	124	3	87	346	8
Whale meal	311	1,889	44	630	3,514	82
Whale meat, frozen	10	80	2	43	331	8

Note: Values converted at rate of 1 krona equal 2.32 U. S. cents.

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TRAWLER FLEET CONTINUES TO DECLINE:

The Icelandic trawler fleet continued to decline in 1964. The operating fleet of 30 trawlers during the year accounted for only 63,000 metric tons of fish and represented 6.5 percent of Iceland's 1964 total fishery catch. By comparison, the trawling fleet in 1963 consisted of 37 operating vessels which caught 71,800 tons of fish or 9.2 percent of that year's total Icelandic catch. The 1963-64 record is in sharp contrast to 1954 when the 51 vessels in the trawler fleet caught 166,901 tons of fish and accounted for 43.1 percent of the total catch.

At the beginning of 1965 the Icelandic trawler fleet consisted of 39 vessels with a total

Iceland (Contd.):

Fig. 1 - Small fishing craft in foreground and a small trawler on far side of wharf at Reykjavik.

gross tonnage of 27,395 tons, of which 30 vessels were in operation and the remaining 9 vessels were moored in Icelandic harbors (6 of them were advertised for sale). Three trawlers were removed from the fleet during 1964 and sold to Greek interests at a reported price of $100,000 each. A fourth trawler was sold to the Faroe Islands but it was returned when an import license could not be obtained.

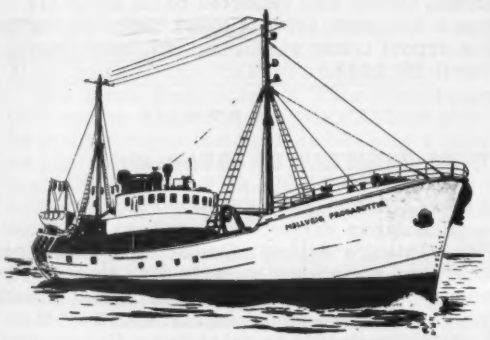

Fig. 2 - One of a number of trawlers built in Great Britain for Iceland in 1948.

Iceland's existing operating trawler fleet consists largely of vessels in the 700-ton class built during 1945-48, with only 4 trawlers in the 1,000-ton class built since 1960. The smaller capacity of the older trawlers (about 300-ton capacity as against 500 tons) reduces their operating efficiency along with the Icelandic legal requirement that trawlers be manned by a crew of 28 to 32. British trawlers, which often fish just outside the Icelandic fisheries limits, normally have a crew of 20 and West German trawlers a crew of 24.

Icelandic trawler owners claim that the economic recovery of the trawler fleet will depend on a reduction of the crew size and permission to fish within the 12-mile fishing limit, an area barred to them since 1958. (United States Embassy, Reykjavik, May 4, 1965.)

Italy

MARINE OIL FOREIGN TRADE, 1963-1964:

Italy's foreign trade in marine oils in 1963 and 1964 consisted almost entirely of incoming shipments as exports were insignificant. Italian imports of marine oils (other than liver oils) in 1964 were down about 5 percent from the previous year due mainly to lower shipments from Norway and Morocco. The decline was partly offset by a sharp gain in shipments from the Netherlands as well as by increases from South Africa, Canada, Peru, and Australia.

Italy's Foreign Trade in Marine Oils, 1963-1964

Commodity and Country of Destination	Imports		Exports	
	1964	1963	1964	1963
	(Metric Tons)			
Marine oils (other than liver oils):				
France	642	1,079	-	-
West Germany	184	116	-	-
Norway	2,818	4,432	-	-
Netherlands	2,021	626	-	-
Portugal	539	706	-	-
United Kingdom	173	255	-	-
Morocco	1,119	1,947	-	-
South Africa	369	6	-	-
Canada	805	297	-	-
Peru	500	114	-	-
United States	12	163	-	-
Australia	151	-	-	-
Other countries	55	121	15	17
Total marine oils (other than liver oils)	9,388	9,862	15	17
Marine liver oils:				
Finland	-	19	-	-
France	-	43	-	-
West Germany	73	58	-	-
Iceland	128	22	-	-
Norway	536	607	-	-
Portugal	184	491	-	-
United Kingdom	410	198	-	-
Others	35	40	4	1
Total marine liver oils	1,366	1,478	4	1

Italian imports of liver oils also showed a modest decline in 1964. (Agricultural Attache United States Embassy, Rome, April 22, 1965.)

Note: See Commercial Fisheries Review, Oct. 1964, p. 60.

Ivory Coast

CANNED SARDINE AND TUNA PRODUCTION PLANS FOR 1965/66 SEASON:

After 6 months of research and experimental packing, a cannery in Abidjan has announced plans for commercial production of canned sardines, using the Gulf of Guinea Sardinella stocks (both S. eba and S. aurita). The company plans a tuna and sardine pack during the 1965/66 season (starting in early August) totaling 30,000 cases of 100 "1/4 club" cans (122 grams or 4.3 ounces net). That pack is to include 2 million cans of sardine fillets in tomato sauce or soya oil and 1 million cans of flake tuna.

The company has learned through market research in the Ivory Coast that flake tuna in the "1/4 club" can sells much better than the "1/10" pack of the same product, and can now be offered to the consumer at the same price as a can of sardine fillets--40 CFA francs (about 16 U. S. cents).

The Abidjan cannery has announced tentative prices at various market levels as follows:

Pricing Point	Price Per "1/4" Can			
	Fillet of Sardines in Oil or Tomato Sauce		Flake Tuna in Oil or Tomato Sauce	
	CFA Francs	U.S. Cents	CFA Francs	U.S. Cents
To distributors	32	12.9	33	13.4
To wholesalers	35	14.2	36	14.6
Retail	40	16.2	40	16.2
For export (tax exempt)	24.6	10.0	25.4	10.3

In recent years, Ivory Coast imports of Moroccan sardines have been about 6 million cans annually. Since the expanded pack of the Abidjan cannery will probably be distributed mainly within the Ivory Coast, imports from Morocco could be cut almost in half during 1965/66, with a more drastic cut possible in later years. (United States Regional Fisheries Attache for Africa, United States Embassy, Abidjan, April 24, 1965.)

Notes: (1) CFA francs 247 equal US$1.00.
(2) See Commercial Fisheries Review, March 1965 p. 75 and Feb. 1965 p. 83.

Japan

SUMMER ALBACORE TUNA FISHERY AND EXPORT PRICE TRENDS:

The summer albacore fishery off Japan was off to a good start as of April 1965. Some 200-300 metric tons were landed daily at Yaizu and Shimizu and as of late April over 4,000 tons had been landed. Ex-vessel prices were 123-125 yen a kilogram (US$310-315 a short ton) for large albacore (over 33 lbs.) and 110-118 yen a kilogram ($277-297 a short ton) for smaller (25-lb.) fish. Most of the large fish was purchased by packers for canning.

The price of frozen round albacore exported to the United States from Japan proper was $365-370 a short ton c.& f. in late April, with the market firm.

The export market for yellowfin tuna is said to have firmed in late April, with prices up $5-10 a short ton since early April. Frozen yellowfin (gilled and gutted) exported to the United States from Japan proper were $365 a short ton c.& f. The Japanese domestic ex-vessel price for yellowfin from the Indian Ocean was reported to be about 112 yen a kilogram ($282 a short ton). Buying for the export trade was brisk. (Suisan Tsushin, April 28, 1965.)

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TUNA INDUSTRY TO ESTABLISH COUNCIL TO REGULATE ATLANTIC ALBACORE TUNA EXPORT TRADE:

The Japan Export Frozen Tuna Producers Association's Atlantic Ocean Tuna Committee convened a meeting in early May to seek ways and means of stabilizing the export of Atlantic-caught albacore tuna. At that meeting, the Committee decide to establish a liaison council, representing the Export Frozen Tuna Producers Association, the National Federation of Tuna Fishermen's Cooperative Associations (NIKKATSUREN), and the Japan Frozen Foods Exporters Association, to develop means of stabilizing the Atlantic albacore trade. Principal functions of the council will be to:

1. Develop and implement an annual export plan. To stabilize albacore exports, the council will develop a seasonal and regional supply plan based on market conditions.

2. Establish stable export prices. Based on minimum export prices to be set by the

Japan (Contd.):

Export Frozen Tuna Producers Association, the council will establish proper sales prices to avoid undue competition among Japanese trading firms and to prevent foreign buyers from beating down prices.

3. Adjust differences in freight costs. In view of differences in freight costs from point of shipment to point of destination, the council will make adjustments so as to enable foreign countries to import albacore under generally similar conditions.

Also at the same meeting, the Committee established the following tentative export targets for Atlantic albacore (based on estimated landings of 48,000 short tons a year): 30,000 tons to U. S. packers in Puerto Rico; 10,000 tons to U. S. packers on the Pacific Coast; and 8,000 tons to Italy, Yugoslavia, and other European countries. However, those targets are expected to be examined in greater detail for development of a monthly supply plan. (Nihon Suisan Shimbun, May 3, 1965.)

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TUNA FEDERATION DEVELOPS PLAN TO STABILIZE FROZEN ALBACORE TUNA EXPORT MARKET:

The Japan Federation of Tuna Fishermen's Cooperative Associations (NIKKATSUREN) for some months has been developing a master plan to reorganize the tuna fishing fleet in an effort to overcome the economic difficulties facing its membership. At a directors meeting in April 1965 the plan and measures to stabilize export tuna prices were reviewed. The meeting adopted a plan whereby NIKKATSUREN would act as sole purchasing agent for all ship-frozen albacore tuna landed in Japan, including surplus Atlantic-caught albacore transshipped to Japan, which it would market in Japan for domestic consumption. NIKKATSUREN estimates the oversupply of Japanese-caught albacore to amount to 20,000-25,000 metric tons a year, but believes that a good potential demand for albacore exists in Japan and hopes to develop it as a means of disposing of the oversupply.

Under NIKKATSUREN's plan, frozen albacore for export would be supplied primarily from the Atlantic and Indian Ocean fisheries and from the mothership and overseas-based fisheries. For example, Japanese albacore exports to California would be transshipped from the Atlantic Ocean rather than shipped from Japan proper. The additional cost of transportation would be shared equally by the fishermen. On the other hand, pole-caught summer albacore would be primarily delivered to domestic packers and ship-frozen albacore supplied to new domestic markets to be developed by NIKKATSUREN.

On April 30, NIKKATSUREN met with the Frozen Foods Exporters Association to explain the gist of its plan to stabilize the albacore market. It was reported that the Japanese trading firms basically supported NIKKATSUREN's albacore redistribution plan, but felt that the trade in Atlantic-caught albacore must first be stabilized in order to stabilize the domestic and export albacore market, and that in this context some kind of control must first be imposed on the flow of Atlantic caught tuna. Further, NIKKATSUREN's plan to control the marketing of ship-frozen albacore landed in Japan may well force up ex-vessel prices for pole-caught albacore, which under NIKKATSUREN's plan would be sold to Japanese packers. (Suisan Tsushin, May 4; Minato Shimbun, April 28, 1965.)

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THIRD CANNED TUNA IN BRINE SALE TO UNITED STATES:

The Tokyo Canned Tuna Sales Company offered for the third sale of canned tuna in brine for export to the United States a total of 350,000 cases, consisting of 280,000 cases of white meat tuna and 70,000 cases of light-meat tuna. Shipping period was May-June 1965. Base prices were US$9.50 a case for solid white and $7.35 a case for solid light. For the first two sales, the Sales Company offered for export a total of 400,000 cases (300,000 cases of whitemeat and 100,000 cases of lightmeat). (Kansume Nippo, May 15, 1965, and other sources.)

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CANNED TUNA PACK TRENDS:

The packing in Japan of canned tuna in brine for export is proceeding at a smooth pace. Some packers by early May 1965 had met their pack quota for the first quarter (April-June). The somewhat accelerated production pace is attributed to several factors: short supply in April and early May of other items to pack (such as mackerel, bamboo sprouts, and beans) and a comparatively abundant supply of tuna available at not too

Japan (Contd.):

high prices. Packers are reported to be paying 110-115 yen a kilogram (US$277-290 a short ton) for albacore and 67-70 yen a kilogram ($169-176 a short ton) for skipjack.

Interior view of tuna canning plant in Japan.

On the other hand, the pack of canned tuna in oil for export is proceeding at a slow pace. Tuna packed in oil are mainly Indian bluefin quoted at 80 yen a kilogram ($202 a short ton) and skipjack at 70 yen a kilogram ($176 a short ton).

Price of the oil pack (mainly for export to Europe) as of early May was around 2,330 yen ($6.47) a case (48 7-oz. cans) and 1,330 yen ($3.69) a case (48 3.5-oz. cans). Packers are reported unable to show a profit at those low prices, which are attributed to the practice of some canners selling their pack even at a loss. (Kanzume Nippo, May 7, 1965.)

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CANNED TUNA SHIPMENTS FROM SHIMIZU, MARCH 1965:

Shipments of canned tuna products made by vessel from Shimizu in March 1965 totaled 430,070 actual cases--250,638 cases to the United States and Canada, 164,789 cases to Europe, and 14,643 cases to other countries. For January-March 1965, a total of 743,248 cases had been shipped from Shimizu. (Kansume Nippo, May 15, 1965.)

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CANNED TUNA IN BRINE EXPORT SALES DEVELOPMENTS:

The Japanese Tuna Packers Association and the Canned Foods Exporters Association in early April 1965 agreed to the 1965 Exporters Agreement governing the export of canned tuna in brine to the United States. The agreement provides that 70 percent of the canned tuna in brine export pack will be allocated to exporters on the basis of their past performance records and 30 percent to be set aside as an adjustment quota. Thus, the Packers Association decided to make available for sale between April-May a total of 400,000 cases (300,000 cases of whitemeat tuna and 100,000 cases of lightmeat tuna), and for the first sale offered 280,000 cases, representing the 70-percent past performance quota.

For the second sale, conducted in early May, the Packers Association offered 120,000 cases, representing the remaining 30-percent adjustment quota (of the original 400,000 cases). Reportedly, the 18 authorized exporting firms submitted offers to purchase a total of 207,773 cases but the Association is only releasing 120,000 cases. This action on the part of the packers is being criticized as being unreasonable at this time when they should be most willing to sell as much as possible, but it is reported that the decision for not offering the full amount requested by the exporters may possibly be based on some kind of understanding with the exporters. (Suisan Tsushin, May 8; Kanzume Nippo, May 8, 1965.)

Note: See Commercial Fisheries Review, July 1965 p. 104; June 1965 p. 72; May 1965 p. 71.

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EXPORTS OF CANNED TUNA IN OIL AND SPECIALTY PACKS, FISCAL YEAR 1964:

Japanese canned tuna in oil approved for export in fiscal year 1964 (April 1964-March 1965) totaled 1,989,004 cases, according to data compiled by the Japan Canned Tuna Packers Association. This was a 33-percent increase over fiscal year 1963 exports and 23.3 percent more than exports in 1962.

Table 1 - Japanese Exports of Canned Tuna in Oil, Fiscal Year 1964 with Comparisons

Product	FY 1964	FY 1963	FY 1962
	(No. of Actual Cases)		
Albacore	388,585	381,246	387,537
Yellowfin	19,517	98,365	45,663
Big-eyed	595,364	945,294	526,915
Skipjack	984,778	498,990	652,357
Tuna flakes	760	900	930
Total	1,989,004	1,924,795	1,613,402

The principal countries of destination for Japan's exports of canned tuna in oil were: West Germany 785,564 cases; Canada 242,792; Great Britain 191,297; Switzerland 139,124; and the Netherlands 108,985 cases.

Japanese canned tuna other than in oil or brine approved for export in fiscal year 1964 totaled 678,224 cases, nearly 50 percent more than the quantity exported in fiscal year 1963.

Japan (Contd.):

Table 2 - Japanese Exports of Canned Tuna Other Than in Oil, Fiscal Year 1964 with Comparsions

Product	FY 1964	FY 1963	FY 1962
	(No. of Actual Cases)		
Jelly tuna	72,064	42,736	95,598
Vegetable tuna	575,583	362,674	328,140
Tuna in tomato sauce	193	17,976	14,168
Tuna flake in soy sauce	20,080	4,600	Unknown
Tenderized tuna	2,700	Unknown	"
Other types	7,604	10,910	7,446
Total	678,224	438,896	445,352

Japan's exports of canned pet food in fiscal year 1964 totaled 841,983 cases, consisting of 823,278 cases of ½-lb. 48's and 18,705 cases of 1-lb. tall 24's. (Suisan Tsushin, April 19; Kanzume Nippo, April 15 & 16, 1965.)

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TUNA INDUSTRY STATUS DISCUSSED AT GOVERNMENT-INDUSTRY MEETINGS:

The Japanese Fisheries Agency has scheduled a series of Government-industry discussion meetings for 1965 to seek ways and means of strengthening the tuna industry which, despite its dominant position in the Japanese fisheries, has been experiencing management difficulties. The Agency plans to hold a total of 7 discussion meetings, beginning in mid-May and ending in November, to thoroughly explore the problems plaguing the tuna industry.

Topics to be discussed at the meetings include: (1) background and present status of the tuna fishery; (2) fisheries management; (3) tuna resources and status of research; (4) marketing; and (5) world tuna trends.

The Agency has already announced the names of the 17 members that will participate in the discussions. Four of the persons selected are Government officials and the others are all from industry. (Nihon Suisan Shimbun, April 28, Suisancho Nippo, April 26, 1965.)

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VERTICAL DISTRIBUTION OF ALBACORE TUNA INFLUENCED BY SECOND THERMOCLINE SAY JAPANESE SCIENTISTS:

A theory attributing the density of summer albacore tuna schools appearing off the coast of Japan to the effect of a thermocline at great depths (upwards to 400-500 meters or 1,312 to 1,640 feet) has been advanced by a scientist of the Tokai University's Fishery Research Laboratory at a seminar conducted several months ago in Tokyo by the Japan Scientific Society of Fisheries.

It is generally held that the vertical distribution of albacore is determined by water temperature conditions in the upper surface layers, as well as by current conditions, and that abundance in any given year is determined by the size of the run. The University scientist maintains that the summer albacore runs off Japan are generally uniform, except that in poor years the albacore are found in waters further to the east in deeper waters. He has successfully located such albacore schools at great depths by means of a new fish finder. He found albacore at depths of 400 meters, and some schools at those depths showed no signs of moving up to the surface for over a week. He concludes that the vertical movement of the albacore, which were caught when they moved to the surface, was presumably due to factors other than response to food stimuli.

The Japanese scientist examined oceanographic data compiled by the Hydrographic Division of the Japanese Maritime Safety Agency during the last 10 years and found that fishing conditions in the past appeared to show some relationship with the distribution pattern of a second thermocline. It is his theory that the vertical distribution of albacore tuna off Japan may be influenced not only by the water temperature in the upper surface layers but also by temperature and current conditions in the deeper depths. (Suisan Keizai Shimbun, April 15, 1965.)

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CANNED FOOD EXPORT TARGETS, FISCAL YEAR 1965:

The Canned Foods Committee of the Japanese Ministry of International Trade and Industry's Agricultural and Marine Products Export Council held a meeting April 20, 1965, to set the fiscal year 1965 (April 1965-March 1966) canned foods export target and to develop recommendations for their attainment. The export target established by the Committee totaled 19,367,000 cases of canned food products valued at US$168,991,000, an increase of 6.7 percent in quantity and 0.9 percent in value over the 1964 exports. The Committee adopted the following recommendations:

Japan (Contd.):

1. The Government should develop measures to ensure procurement of raw materials by packers. For that purpose, the Government should exercise a greater degree of administrative leadership to facilitate collective bargaining between suppliers and packers, and to encourage suppliers to speed up delivery of raw material.

2. Canned prices should be reduced.

3. The Government should relax loan requirements by establishing a system whereby sales companies may advance loans to packers under terms similar to those granted by financial institutions to exporters and also permit higher ceilings on long-term low-interest improvement loans.

4. The Government should conduct more positive economic negotiations with foreign countries to increase canned food exports. For that purpose, it should: (a) Seek to have the United States reduce as follows the ad valorem import duties on the following fishery products: canned tuna in oil, from 35 percent to 12.5 percent, the rate presently applied to canned tuna in brine imports; canned crab meat, from 22.5 percent to 11.5 percent; and canned clams, to 10 percent. (b) Seek to have the United States abolish the tariff quota on canned tuna in brine imports. (c) Include canned sardines, mackerel, saury, squid, and salmon (particularly pink) in the items of reparations goods to be delivered to the Phillippines and Indonesia. (d) Seek to increase the import quotas set by southeast Asian countries, especially Indonesia and Malaysia, on canned saury and mackerel. (e) Forestall movements in foreign countries aimed at restricting imports of Japanese products. (f) Prohibit exports of products on which substantially high tariffs would be imposed through application of the European Economic Community (EEC) common tariff and seek to reduce EEC common tariffs.

5. Study ways of promoting exports of products which meet export specifications.

6. Step up promotional activities abroad and increase Government subsidy to cover expenses required for marketing research to promote demand.

7. Apply the existing sugar export rebate system to all canned food exports and simplify rebate procedure.

8. Grant favorable treatment in assessing charges for public-operated services, such as railway transportation, and establish special domestic transportation arrangements for seasonal shipments of export canned food products. (Suisan Keizai Shimbun, April 2; Suisan Tsushin, April 22, 1965.)

Japanese Canned Foods Export Targets for FY 1964 with Comparisons

Product	Quantity		Value	
	FY 1965	FY 1964	FY 1965	FY 1964
	. . (1,000 Cases). .		. . (US$1,000) . .	
Tuna	5,000	4,565	38,863	37,002
Salmon	1,230	1,365	41,624	45,703
Crab meat	511	554	12,658	13,118
Sardine	110	44	782	356
Saury	1,200	1,090	7,464	6,684
Mackerel	1,010	881	6,310	5,825
Other fishery products	3,136	3,014	19,415	19,192
Pet food	1,100	1,014	3,520	3,275
Other food products	6,070	5,616	38,355	36,195
Total	19,367	18,143	168,991	167,350

Note: See Commercial Fisheries Review, June 1964 p. 45.

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SALMON PRICE NEGOTIATIONS:

The Japan Federation of Salmon Fishermen's Associations (NIKKEIREN) in April was negotiating 1965 salmon prices with the Japanese firms operating motherships. On April 16, 1965, NIKKEIREN asked for a 30-percent increase over 1964 prices, claiming that its asking prices were calculated on the basis of what it would cost to build and operate a typical steel salmon vessel of 96 gross tons (normally costs 53 million yen or US$147,000 to build), plus what the Federation considered a reasonable profit (10 percent). The mothership operators claimed they could not possibly accept the Federation's offer and on April 22 countered with an offer amounting to less than a 1 percent increase.

On April 24, NIKKEIREN lowered its demand and asked for an overall increase of 20 percent over 1964 prices. The mothership operators countered with an offer of a 3-percent increase. (Suisan Keizai Shimbun, April 23 & 27, 1965.)

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SETTLEMENT REACHED ON 1965 SALMON EX-VESSEL PRICES:

On May 7, 1965, following several weeks of negotiations, the Japan Federation of Salm-

Japan (Contd.):

on Fishermen's Associations (NIKKEIREN) and the salmon mothership operators reached agreement on the following 1965 salmon ex-vessel prices:

Species	1965 Price		1964 Price
	Yen/Kg.	Cents/Lb.	Cents/Lb.
Red	243.26	30.7	27.4
Chum	131.82	16.6	14.9
Pink	106.60	13.4	11.9
King & silver	143.81	18.1	16.2

Prices agreed upon represent a uniform 12-percent increase over 1964 prices. The negotiations began with NIKKEIREN asking for a 30-percent increase, and the mothership operators countering with an offer amounting to less than a one-percent increase. (Suisan Keizai Shimbun, May 9, 1965.)

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SALMON MOTHERSHIP FLEET COMPOSITION AND CATCH QUOTA FOR 1965:

A total of 11 Japanese motherships accompanied by 369 catcher vessels (same as in 1964) will participate in Japan's 1965 high-seas salmon fishery. The mothership fleets will have a total complement of 12,048 men. The 11 fleets were scheduled to leave Japan for the salmon fishing grounds in the North Pacific and Bering Sea on May 15, 1965. Their combined catch quota is 45,478 met-

Retrieving a gill net and removing salmon aboard a Japanese gill-netter in the North Pacific.

Japanese Salmon Mothership Fleet Composition in 1965

Name	Vessel Size	Processing Equipment		Catcher Vessels	Crew Complement	
		Canning Lines	Daily Freezing Capacity		Mothership	Catcher Vessels
	Gross Tons		Tons	No.		
Shinano Maru	9,048	3	50	35	479	770
Meisei Maru No. 2 . .	9,356	3	Unknown	36	453	792
Meisei Maru	8,571	3	50	35	459	770
Kizan Maru	8,622	3	20	33	449	726
Miyajima Maru	9,612	2	200	30	328	638
Takashima Maru . . .	9,856	3	300	29	362	635
Chiyo Maru	7,149	2	150	36	320	729
Jinyo Maru	7,161	3	150	36	330	730
Meiyo Maru	7,152	3	200	36	350	720
Otsu Maru	8,033	3	210	31	330	630
Kyokusan Maru	10,757	2	150	32	344	704
Total	95,317	30		369	4,204	7,844

Japan (Contd.):

ric tons as compared with 55,000 tons in 1964. (Suisancho Nippo, April 17, 1965; Hokkai Shimbun, May 10, 1965.)

Note: See Commercial Fisheries Review, July 1964 p. 62.

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SALMON MOTHERSHIP CANNED PACK TO BE TRANSSHIPPED DIRECTLY TO GREAT BRITAIN:

Two Japanese firms operating salmon motherships in the North Pacific and Bering Sea are planning on transshipping their factoryship-produced salmon pack directly from the fishing grounds to Great Britain in 1965. By doing so, it is estimated that it will take about 35 days for shipments to reach their destination and cut down shipping time by 30 days. Under the old system whereby the canned pack was hauled to Japan by carrier vessels, unloaded, inspected, and reshipped, it took a minimum of 65 days. (Suisan Tsushin, May 14, 1965.)

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EXPORTS OF CANNED CRAB MEAT, JANUARY-MARCH 1964-65:

Japanese exports of canned crab meat in the first quarter of 1965 totaled 108,082 cases (48 ½-lb. cans), down 3.5 percent from the 111,979 cases exported in the same period of 1964. King crab accounted for about 94 percent of all crab meat exported. The remainder was from kegani, hanasaki, and zuwai crab.

Japanese Exports of Canned Crab Meat by Country, January-March 1964-65

1965	United States	United Kingdom	France	Other	Total
	. . .(No. of cases of 48 1/2-lb. cans) . . .				
Month:					
January	9,643	3,150	8,015	3,807	24,615
February	19,420	2,144	5,598	5,556	32,718
March	26,000	19,065	3,310	2,374	50,749
Total 1st Qtr. 1965	55,063	24,359	16,923	11,737	108,082
1964 Month:					
January	12,351	13,795	3,400	3,566	33,112
February	17,067	17,465	4,027	4,962	43,521
March	26,224	3,456	3,875	1,791	35,346
Total 1st Qtr. 1964	55,642	34,716	11,302	10,319	111,979

Source: Japan Canned Crab Sales Co.

Packing canned crab meat into cartons aboard a Japanese factoryship in the North Pacific.

The United States and the United Kingdom are the leading markets for Japan's crab meat exports. The United States took 50.9 percent of Japan's first quarter 1965 exports, and 22.5 percent went to the United Kingdom. France was the next leading purchaser. (Fisheries Attache, United States Embassy, Tokyo, April 30, 1965.)

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CANNED KING CRAB EXPORT PRICES INCREASED:

The Japan Canned Crab Sales Company as of May 1965 increased the canned king crab export price (f.o.b. Japan) of fancy ½-pound 48's to US$28.40 a case from $28.15, and fancy ¼-pound 48's to $17.15 a case from $16.90. (Minato Shimbun, May 16, 1965.)

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CRAB ENTERPRISE IN CHILE DELAYED:

Two Japanese fishing companies and a trading firm formed a group called the "Chile Committee" to establish a joint Japanese-Chilean venture. The Committee had hoped to begin by establishing a centolla crab enterprise in Chile and in late 1964 one of the Japanese fishing firms cooperated with Chile in surveying the crab resources of that country. It is now reported that the Committee has temporarily held up its plans to establish a joint enterprise in Chile as it has not yet found a suitable undertaking that the joint company, if established, could engage in other than crab fishing, the season for which is reported short. (Suisancho Nippo, May 15, 1965.)

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Japan (Contd.):

CANNED SHRIMP EXPORTS, MARCH 1965:

Japan's exports of canned shrimp in March 1965 amounted to 11,032 cases (converted to 24 ½-lb. cans), a decrease of 63 percent from the total exported during the same month in 1964. The March 1965 exports of canned shrimp were down 2,526 cases or 18.6 percent from February 1965.

Japan's Exports of Canned Shrimp by Country of Destination, March 1965

No. Cans Per Case	Size	U.S.	Great Britain	Canada	Other Countries	Total
		(No. of Actual Cases)				
24 1/2-lb.	Small	1,666	4,968	-	404	7,038
48 1/4-lb.	"	-	9	-	-	9
24 1/2-lb.	Tiny	-	-	-	511	511
48 1/4-lb.	"	-	43	-	-	43
24 1/2-lb.	Broken	3,411	-	-	-	3,411
48 1/4-lb.	"	-	20	-	-	20
		(No. of Standard Cases of 24 1/2-lb. Cans)				
Total March 1965		5,077	5,040	-	915	11,032
Exports March 1964		14,262	9,243	2,900	3,087	29,492

Note: Size of can indicates total weight of contents in can.
Source: Japan Canned Crab Sales Co. (Sales agent for canned shrimp.)

The United States and Great Britain purchased the bulk of Japanese canned shrimp exported in March, about equally divided between the two countries. (Fisheries Attache, United States Embassy, Tokyo, May 4, 1965.)

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FISHING PLANS IN BERING SEA:

The Japanese fish-meal factoryship Tenyo Maru (11,581 gross tons) departed Yokohama, Japan, on April 20, 1965, for the eastern Bering Sea where she is scheduled to operate until the end of September. Her production target is 5,000 metric tons of minced meat and 3,000 tons of fish meal. Tenyo Maru is the first Japanese factoryship to be equipped with facilities to process minced fish meat, which is used to manufacture fish sausage and fish cake. Alaska pollock will be used. Two other major fishing firms are said to be showing active interest in entering this type of venture. (Suisan Keizai Shimbun, April 21, 1965.)

The Japanese fish-meal factoryship Hoyo Maru (14,111 tons), accompanied by 29 catcher vessels, departed Hakodate, Hokkaido, on

Fig. 1 - Japanese trawler attached to fish meal factoryship Tenyo Maru.

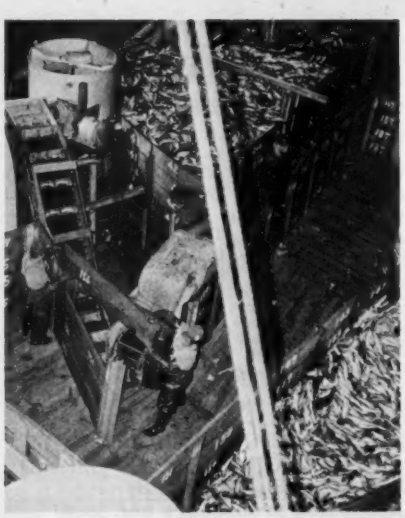

Fig. 2 - Fish meal factoryship Tenyo Maru--port side of main deck forward of deckhouse.

Japan (Contd.):

April 22 for the eastern Bering Sea. Scheduled to operate in Bering Sea bottomfish grounds until September 21, she has a production target of 13,500 metric tons of fish meal, 2,900 tons of fish solubles, 1,300 tons of oil, and 4,800 tons of frozen fish. (Suisan Tsushin, April 23, 1965.)

The factoryship Seifu Maru (8,269 gross tons) was scheduled to depart for the waters off Cape Olyutorski in the Bering Sea about May 15 to fish primarily for herring.

Fig. 3 - King crab factoryship Tokei Maru.

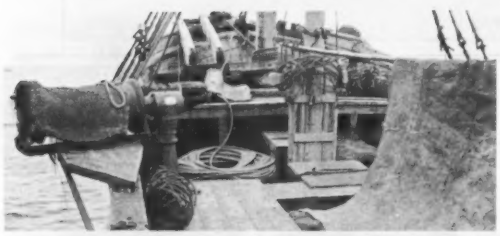

Fig. 4 - Hoisting gear in bow of trawler attached to factoryship Tokei Maru.

The two Japanese king crab factoryships operating in Bristol Bay were doing well and averaging 10.1 crabs per shackle as compared to 10 crabs per shackle last year. As of April 25, the Tainichi Maru (5,858 gross tons) had produced 22,113 cases as compared to 18,769 cases for the same period last year, and the Tokei Maru (5,385 gross tons) 23,730 cases as compared to 21,827 cases a year ago. (Suisan Tsushin, April 27, 1965.)

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PLANS TO PRODUCE MINCED FISH ABOARD FACTORYSHIPS OPPOSED BY LAND-BASED PROCESSORS:

Minced fish processors and local fishermen in Hokkaido were in an uproar over the plans of several large Japanese fishing firms to produce factoryship-processed minced fish (used in the manufacture of fish cake and sausage). It was said that one of Japan's largest fishing companies plans to produce 5,000 metric tons of minced meat in its 1965 Bering Sea factoryship operations and another plans to produce 2,000 tons. The Hokkaido processors and fishermen contend that such factoryship processing would seriously jeopardize the local minced fish industry. They have petitioned their prefecture governor for support and were also planning to appeal to their Diet representatives to forestall such operations. In 1964, the Hokkaido processors reportedly produced about 20,000 tons of minced fish. (Nihon Suisan Shimbun, May 3, 1965.)

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FISH MEAL MARKET TRENDS, 1965:

The three major Japanese fishing firms which will be operating fish-meal factoryships in the Bering Sea in 1965, were planning to confer with each other over the establishment of a standard price for factoryship-produced fish meal before starting negotiations with livestock producers.

The demand for fish meal in Japan has increased greatly despite higher prices. In 1964, 105,000 metric tons of fish meal were imported by Japan and imports are expected to increase to 148,000 tons in 1965. The standard price per metric ton for fish meal in 1963 was 62,500 yen (US$174), and in 1964, 60,500 yen ($168). Fish-meal production from the Japan-Soviet joint fish-meal operation in the Okhotsk Sea in January-March 1965 was sold in Japan for 63,750 yen ($177). The three Japanese companies were reported to be seeking at least 64,000 yen ($178) for their summer 1965 fish-meal production. (Suisan-cho Nippo, May 7, 1965.)

Note: See Commercial Fisheries Review, June 1965 p. 61.

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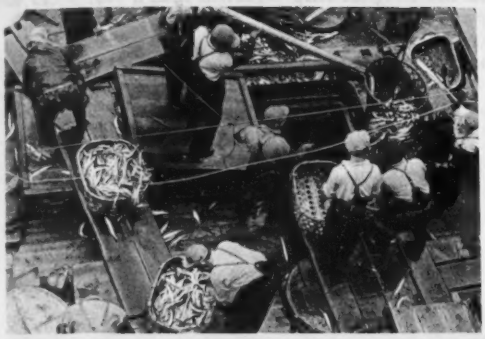
MACKEREL FISHING AND PRICE TRENDS AS OF EARLY MAY 1965:

Weather conditions which slowed Japanese mackerel fishing in April 1965 were reported improved in early May, and mackerel fishing off the Izu Peninsula (southwest of Tokyo) and off Choshi (east of Tokyo) picked up considerably since May 7. On that day, packers in the Yaizu area were reported paying high prices of 33-34 yen a kilogram (US$83-86 a short ton) for ¾- to 1-lb. size fish. At Choshi, 1,000 metric tons of mackerel landed on May 7

Japan (Contd.):



Washing mackerel prior to putting it in the vessel's fish hold.

brought 23-26 yen a kilogram ($58-66 a short ton). On May 10, pole-caught mackerel sold for 30 yen a kilogram ($76 a short ton), with seine-caught fish bringing about 20 yen a kilogram ($50 a short ton). Choshi packers were reported actively buying fish. (Suisancho Nippo, May 10, 1965.)

Note: See Commercial Fisheries Review, June 1965 p. 61.

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MARINE OIL SUPPLY AND DISPOSITION, 1963-1964 AND 1965 FORECAST:

Edible Marine Oil: The Japanese supply of edible marine oils in 1964 was down about 17 percent from the previous year due to lower production of both fish oil and whale oil. Fish oil output is expected to recover in 1965. Whale oil output, however, will probably continue at a reduced level as a result of Antarctic conservation measures.

Japanese imports of marine oil are small. In 1964, the imports consisted mainly of shark-liver oil.

With supplies reduced, Japanese exports of edible marine oil were down 31 percent in 1964 due mainly to lower whale oil shipments to the Netherlands. Whale oil accounts for most of Japanese exports of edible marine

Table 1 - Japanese Supply and Disposition of Edible Marine Oils, 1963-1964 and 1965 Forecast

Item	Calendar Years		
	Forecast 1965	1964	1963
	(1,000 Metric Tons)		
SUPPLY:			
Opening Stocks, January 1:			
Fish oil and fish-liver oil	7.7	9.9	18.5
Whale oil	3.9	5.9	5.1
Total opening stocks	11.6	15.8	23.6
Production:			
Whale oil	99.1	109.1	127.0
Fish oil	27.0	18.1	24.0
Fish-liver oil	9.6	8.9	9.3
Total production	135.7	136.1	160.3
Imports	0.5	0.4	0.5
Total supply	147.8	152.3	184.4
DISPOSITION:			
Exports	84.0	82.8	119.3
Domestic disappearance	1/	1/	1/

1/Not available. (The Japanese Ministry of Agriculture and Forestry estimated that domestic food uses of marine oils in fiscal year 1965 amounted to 49,900 metric tons--17,000 tons whale oil and 32,900 tons fish oil--most of which was consumed in the manufacture of margarine and shortening. In addition 2,000 tons of fish oil was consumed for nonfood uses.)

Table 2 - Japanese Supply and Disposition of Inedible Marine Oil (Sperm Oil)1/ 1963-1964 and 1965 forecast

Item	Calendar Years		
	Forecast 1965	1964	1963
	(1,000 Metric Tons)		
SUPPLY:			
Opening stocks, January 1 2/	6.8	7.3	6.5
Production	38.8	45.9	37.8
Imports	-	-	-
Total supply	45.6	53.2	44.3
DISPOSITION:			
Exports	14.4	25.0	3/ 12.5
Domestic disappearance	4/	4/	4/

1/The Japanese supply of inedible marine oil consists of sperm oil.
2/Stocks held by oil-processing factories.
3/Estimated by the Japanese Ministry of Agriculture and Forestry.
4/Data not available. (The Japanese Ministry of Agriculture and Forestry estimated that domestic use of sperm oil in fiscal year 1965 amounted to 24,400 tons.)

Table 3 - Japanese Imports of Marine Oils, 1963-1964

Commodity and Country of Origin	1964	1963
	(Metric Tons)	
EDIBLE MARINE OIL:		
Shark-liver oil:		
Republic of China	38	76
Hong Kong	53	19
Norway	86	49
Spain	120	-
Other countries	27	5
Total shark-liver oil	324	149
Other fish-liver oils	25	69
Fish oil:		
Peru	-	271
South Africa Republic	-	1
Total fish oil	-	272
Whale oil:		
United States	2	10
Total edible marine oils	351	500
INEDIBLE MARINE OIL:		
Sperm oil:		
United States	10	7

Source: Japanese Customs Bureau, Ministry of Finance.

Japan (Contd.):

Table 4 - Japanese Exports of Marine Oils, 1963-1964

Commodity and Country of Destination	1964	1963
	. . . (Metric Tons) . . .	
EDIBLE MARINE OIL:		
Whale oil:		
Netherlands	25,119	54,690
United Kingdom	20,974	27,880
West Germany	15,901	15,685
France	13,111	13,564
Belgium	5,463	5,080
North Korea	130	226
United States	9	-
Australia	-	301
Total whale oil	80,707	117,426
Fish oil:		
United States	135	-
South Korea	162	90
Other countries	-	24
Total fish oil	297	114
Cod-liver oil:		
United States	617	748
Other countries	362	314
Total cod-liver oil	979	1,062
Shark-liver oil:		
All countries	121	17
Unclassified fish-liver oils:		
United States	225	293
Norway	124	33
Other countries	321	281
Total unclassified fish-liver oils	670	607
Unclassified edible marine oil	-	31
Total edible marine oil exports	82,774	119,257
INEDIBLE MARINE OIL:		
Sperm oil:		
United States	6,633	7,532
Netherlands	13,609	1/
United Kingdom	2,540	3,853
France	2,130	-
West Germany	96	2,302
Other countries	2	323
Total sperm exports	25,010	1/

1/Data not available.
Source: Japanese Customs Bureau, Ministry of Finance.

oil, and the leading buyers are the Netherlands, the United Kingdom, West Germany, and France.

Inedible Marine Oil: Japanese production of sperm oil increased in 1964, but is expected to decline in 1965. Complete data on Japanese exports of sperm oil is not available, although estimates indicate the exports increased in 1964. (Agricultural Attache, United States Embassy, Tokyo, April 21, 1965.)

Note: See Commercial Fisheries Review, Aug. 1964 p. 74.

* * * * *

WHALING OPERATIONS IN NORTH PACIFIC IN 1965 CONDUCTED JOINTLY BY TWO JAPANESE FIRMS:

Two Japanese fishing firms will conduct joint whaling operations in the North Pacific Ocean in 1965. One of those firms will operate the mothership Nisshin Maru No. 3 (23,406 gross tons) which has been assigned a catch target of 1,640 sperm whales. Accompanying that firm's mothership are 1 scout vessel and 6 catcher boats. The other firm will operate the mothership Kyokuyo Maru (11,448 gross tons) accompanied by 2 freezer factoryships (Kyokurei Maru of 9,943 gross tons and the Koyo Maru of 7,658 gross tons), 7 catcher boats, and 3 carrier vessels. Her production target is 534 blue-whale units (30 blue whales,

Fig. 1 - Japanese whale catcher vessel in North Pacific.

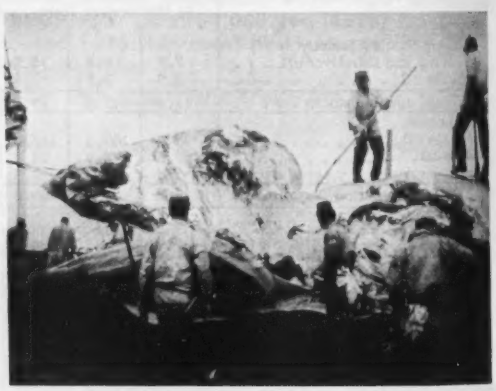


Fig. 2 - Flensing sperm whale aboard a Japanese factory-mothership in the North Pacific.

Japan (Contd.):

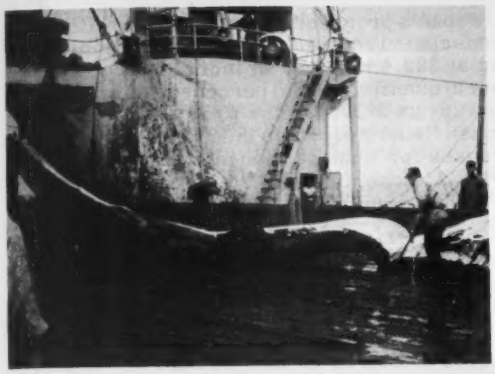


Fig. 3 - Strip of whale blubber and skin being hauled to foredeck for chopping.

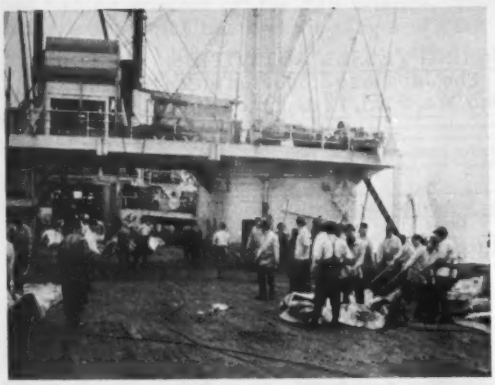


Fig. 4 - Cubing whale blubber strips in foredeck area of factory-mothership.

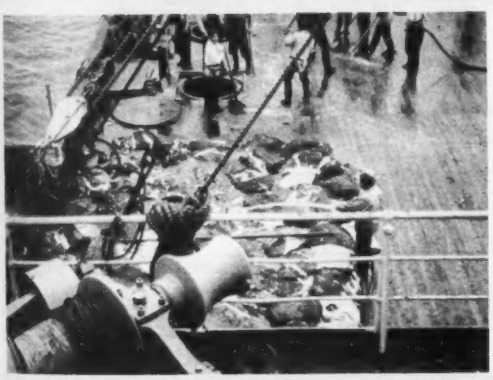


Fig. 5 - Sperm whale meat ready for freezing.

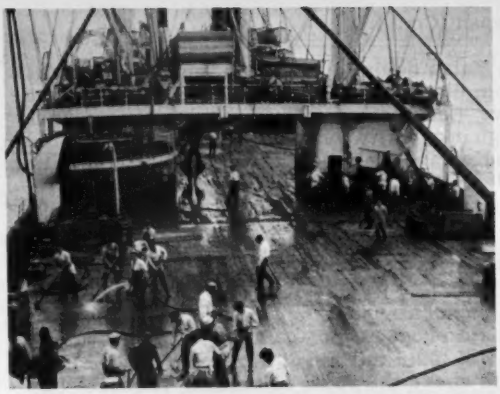


Fig. 6 - Washing down the deck of Japanese whaling factory-mothership in North Pacific.

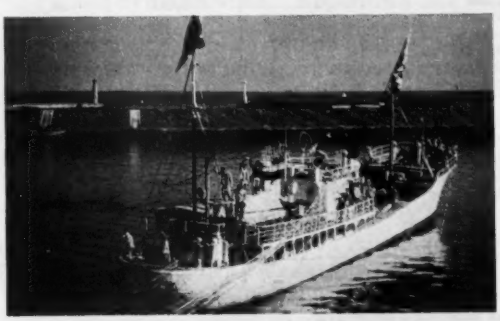
680 fin whales, and 1,200 sei whales). Both mothership fleets were scheduled to depart Japan on May 20, 1965. (Suisan Keizai Shimbun, April 18, 1965.)

* * * * *

YAIZU FISHERY LANDINGS, APRIL 1965: A total of 18,720 metric tons of fish valued at 1.9 billion yen (US$5.3 million) was landed

Yaizu Fish Landings and Ex-Vessel Value, April 1965

	Quantity		Ex-Vessel Value		Ex-Vessel Price Per Ton	
	1965	1964	1965	1964	1965	1964
	(Metric Tons)		(US$1,000)		(US$)	
Tuna:						
Bluefin	7,011	7,384	2,734	2,567	390	348
Albacore	4,684	1,959	1,469	654	314	334
Skipjack	2,646	2,558	724	609	274	238
Mackerel	3,711	4,733	377	372	102	79
Other	668	834	178	178	267	213
Total	18,720	17,468	5,482	4,380		



Japanese tuna long-liner leaving Yaizu, principal tuna port, for the the Indian Ocean fishing grounds.

Japan (Contd.):

at Yaizu during April 1965, according to data compiled by the Yaizu Fishermen's Cooperative Association. This marks a new April high in quantity and value for that port. (Suisan Keizai Shimbun & Suisancho Nippo, May 11, 1965.)

* * * * *

EXPORT TARGETS FOR FISHERY AND AQUATIC PRODUCTS, FISCAL YEAR 1965:

Japan's export target for fishery and aquatic products in fiscal year 1965 is valued at US$299.9 million, an increase of 3.0 percent above the value of similar products exported in 1964. Canned fishery products account for 42.0 percent of the total value, frozen and fresh products 36.0 percent, cultured pearls 19.0 percent, salted and dried products 2.0 percent, and agar-agar 1.0 percent.

The proposed exports of canned fishery products in 1965 of 12.2 million cases valued at $127.1 million is an increase of 5.9 percent in quantity and a 0.6 percent decrease in value as compared with exports during the previous year.

Japan's proposed exports of frozen fishery products in 1965 total 279,050 metric tons valued at $92.4 million, an increase of 7.4 percent in quantity and 8.5 percent in value above the exports in 1964. The proposed exports of frozen fishery products in 1965 show sharp increases for tuna, salmon, and shrimp. (Fisheries Attache, United States Embassy, Tokyo, April 30, 1965.)

* * * * *

1965 IMPORTS OF SALMON ROE FROM U. S. AND CANADA:

A number of Japan's large fishing firms have made arrangements to import into Japan in 1965 a total of about 1,500 metric tons of salmon roe from the United States and Canada. (Minato Shimbun, May 9, 1965.)

* * * * *

FISHING VESSEL ACTIVITIES:

The Japanese 3,500-ton stern trawler Akebono Maru No. 72 departed Kurihama, Kana-

Japanese Export Targets for Fishery and Aquatic Products, Fiscal Year 1965

Product	FY 1965 Export Target Qty.	FY 1965 Export Target Value1/	FY 1964 Export Target Qty.	FY 1964 Export Target Value1/	FY 1964 Actual Exports Qty.	FY 1964 Actual Exports Value1/
	1,000 Cases	US$1,000	1,000 Cases	US$1,000	1,000 Cases	US$1,000
Canned Fish:						
Tuna	5,000	38,863	4,450	37,513	4,565	37,002
Salmon	1,230	41,624	1,395	43,962	1,365	45,703
Crab meat	511	12,658	438	11,004	554	13,118
Sardines	110	782	100	780	44	356
Saury	1,200	7,464	1,650	10,680	1,090	6,684
Horse-mackerel	1,010	6,310	600	3,948	882	5,825
Other fish and shellfish	3,136	19,415	2,590	17,521	3,014	19,192
Total canned fish	12,197	127,116	11,223	125,408	11,514	127,880
	Metric Tons		Metric Tons		Metric Tons	
Frozen Fish & Shellfish:						
Tuna	178,000	64,507	177,804	61,627	156,198	56,607
Swordfish	6,350	4,568	6,800	4,320	6,018	4,329
Salmon	1,500	1,580	1,500	1,940	1,164	1,228
Rainbow trout	1,700	1,500	1,500	1,415	1,690	1,482
Shrimp	1,500	2,250	1,500	2,174	1,235	1,850
Other	90,000	18,000	55,000	13,530	93,461	19,641
Total frozen fish & shellfish	279,050	92,405	244,104	85,006	259,766	85,137
Fresh fishery products	48,000	14,740	55,500	16,095	16,900	5,191
Other Products:						
Salted and dried	4,444	6,100	4,200	5,800	4,397	6,029
Agar-agar	600	2,050	350	1,260	600	2,046
	Kans2/		Kans2/		Kans2/	
Pearls (cultured)	20,500	57,500	19,000	51,300	20,054	55,148
Total value of all products		299,911		284,869		281,431

1/Based on f.o.b. prices in Japan.
2/In kans: One kan equals 8.267 pounds.
Note: Fiscal Year begins April 1.
Source: Export Approval Statistics and Customs Clearance.

Japan (Contd.):

gawa Prefecture, April 28, 1965, for the eastern Bering Sea. (Suisan Keizai Shimbun, April 29, 1965.)

The fish-meal freezer-factoryship Soyo Maru (11,192 gross tons) was scheduled to depart for the eastern Bering Sea on May 15 from central Japan. Her production target is 5,000 metric tons of fish meal and 6,000 tons of frozen herring. (Suisancho Nippo, May 7, 1965.)

The 3,470-ton stern trawler Takachiho Maru, presently operating in the Gulf of Alaska, was scheduled to return to Tokyo on May 21. (Suisan Tsushin, May 12, 1965.)

The 5,043-ton tuna factoryship Yuyo Maru departed Tokyo, May 11, for the South Pacific tuna fishing grounds off the Fiji Islands. The factoryship, which has a catch target of 8,000 metric tons of tuna, is scheduled to remain on the fishing grounds for about 116 days. A total of 55 catcher vessels is expected to fish for the factoryship.

The 2,500-ton stern trawler Teshio Maru (completed in late April 1965) was scheduled to depart Tobata, Fukuoka Prefecture, for the west African trawling grounds on May 12. (Suisan Keizai Shimbun, May 12, 1965.)

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VESSEL CONSTRUCTION, APRIL-MAY 1965:

Construction of the Japanese stern trawler Shinsei Maru (1,902 gross tons) was completed in April 1965 and was scheduled to leave for the West African trawling grounds about May 20. The vessel was built for the Yamaguchi Prefectural Fisheries Producers Association. The vessel's specifications are: length 75 meters (246 feet); beam 13 meters (43 feet); fish-hold capacity 2,304 cubic meters (81,330 cubic feet); freezing room capacity 304 cubic meters (1,073 cubic feet); daily freezing capacity 40 metric tons; cruising speed 12.3 knots; and complement 68 men. (Minato Shimbun, May 14, 1965.)

The vessel Taikei Maru (212 gross tons), reported to be the first Japanese purse seiner equipped with two power blocks, was completed at Ishinomaki, Miyagi Prefecture, on May 6. On May 10, the vessel was sent to the skipjack tuna fishing grounds south of Hachijo-jima. The island is located some 120 miles south of Tokyo. (Suisan Keizai Shimbun, May 14, 1965.)

* * * * *

VIEWS ON EXTENSION OF NORTHWEST PACIFIC FISHERIES TREATY WITH THE SOVIET UNION:

The Japanese-Soviet Fisheries Treaty, under which salmon and king crab fishing are regulated in the Northwest Pacific, will expire December 12, 1966. Japanese views on extension of the Treaty were summarized in the Japanese periodical Nihon Keizai, May 9, 1965, as follows:

There is a strong possibility that the Japanese-Soviet Fisheries Treaty will be extended without amendment. The usefulness of the Treaty was emphasized in a Joint Communique issued by the Soviet Fisheries Minister and the Japanese Minister of Agriculture and Forestry. Their statement was issued during the Japanese Minister's visit to the Soviet Union in the spring of 1965.

There is some Japanese dissatisfaction with the Treaty. However, Japanese requests for changes in the Treaty might be met by Soviet demands to: (1) equalize the salmon catch quotas (Japan's quota in 1965 was set at 115,000 metric tons, as against 85,000 tons for the Soviets) and (2) exclude king crab fisheries on the west coast of Kamchatka Peninsula from the Treaty on account of the coming into force of the International Convention on the Continental Shelf.

Under the circumstances, the Japanese have adopted a waiting attitude, at least for the time being. In this regard, the reported policy of the Japanese Agriculture-Forestry Minister during his Soviet visit was to discuss revision of the Treaty only if the matter was raised by the Soviets. Apparently the talks between the Japanese and Soviet Ministers did not extend to revisions of the Treaty as their Joint Communique mentioned only the usefulness of the Treaty. (United States Embassy, Tokyo, May 12, 1965.)

Note: See Commercial Fisheries Review, June 1965 p. 42, April 1965 p. 72.

* * * * *

ROLE OF FISHERIES AND AGRICULTURE IN NATIONAL ECONOMY:

Japan, which ranks second to Peru in fish production, is commonly acknowledged as a fish-producing nation, and Japan's national income from fishing in fiscal year 1963 was

Japan (Contd.):

¥387.5 billion (US$1.1 billion). But that income from fishing accounted for only 2.1 percent of the Japanese gross national income in FY 1963, and the number of Japanese (626,000) engaged in fishing constituted only 1.3 percent of the total number employed. However, the income from fishing was substantially higher in fiscal year 1963 (starts in April) than in fiscal year 1962 when it was ¥355.7 billion (almost $1.0 billion).

Agricultural income in relation to gross national income in 1963 was only 9.2 percent, while the number of workers engaged in farming was 25.9 percent of the total employed.

Further, the importance of fishing and agriculture in the national economy is diminishing due to the rapid tempo of the nation's industrial development.

Japan leads the world today in production of ships, cameras, and motion pictures. Her electronic industry ranks second in the world after that of the United States, while her iron, steel, chemical, and watch industries rank third in the world.

Some 53 percent of Japan's total volume of exports is composed of products of the heavy and chemical industries. Exports of fishery products in 1963 totaled $280 million and were estimated to comprise between 5 to 6 percent of total exports. (Japan Report, April 30, 1965; Japan 1964 "White Paper" on Fisheries.)

* * * * *

HEARING ON IMPORTS OF SOVIET POLLOCK FOR FISH MEAL:

The Standing Committee for Audit of Japan's House of Representatives held a hearing on May 12, 1965, to discuss the proposed plans of major Japanese firms to enter into joint agreements with the Soviet Union to import 120,000 metric tons of Soviet-produced Okhotsk Sea Alaska pollock for manufacturing into fish meal and the effect such plans, if approved, may have on the domestic fishery.

Japan's Fisheries Agency Production Division Chief stated that as of that time formal applications to engage in such an enterprise had not been received by the Agency. He expressed belief that the pollock resources off the Hokkaido coast and those off the west Kamchatka coast were distinct, and that the resources off west Kamchatka would not likely be in danger unless large-scale operations were conducted.

The Ministry of Agriculture and Forestry's Parliamentary Vice-Minister stated he hoped to see the use of Soviet-caught Alaska pollock limited to 35,000 metric tons.

In January-March 1965, one large Japanese firm operated the 14,000-ton factoryship Hoyo Maru in the Okhotsk Sea and processed into fish meal 36,300 tons of Soviet-caught Alaska pollock. That firm was reported to have signed a three-year contract with the Soviet Union. At least two other firms were said to be interested in participating in similar ventures with the Soviet Union. (Suisan Keizai Shimbun, May 12, 1965 and other sources.)

Note: See Commercial Fisheries Review, May 1965 p. 76; Mar. 1965 p. 83.

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PRIVATE KELP AGREEMENT WITH SOVIETS EXTENDED TWO YEARS:

A Japanese-U.S.S.R. agreement to extend the private kelp fishery agreement (originally concluded in 1963) between those two countries for a period of 2 years was concluded at Moscow on April 12, 1965.

Under the agreement, Japanese fishermen will be permitted to harvest kelp in a selected area in the Nemuro Straits by paying a stipulated fee to the Soviet Union. One change in the original agreement has been made on the harvesting of finfish by Japanese kelp fishermen. Previously, they were not permitted to harvest anything but kelp but will under the new agreement be permitted to catch up to 10 kilograms (22 pounds) of fish per person per day for personal use. (Shin Suisan Shimbun Sokuho, May 15, 1965 and other sources.)

Note: See Commercial Fisheries Review, October 1964 p. 72.

* * * * *

UNDERWATER FISH FARM PROGRAM PLANNED:

The Japanese Fisheries Agency has been actively pushing forward plans to develop bottom marine resources through "underwater fish farming." The plan is said to have the firm support of Japan's State Minister who initially suggested it as a means of developing the bottomfish resources of the Continental Shelf. The Minister was reported to have agreed to the inclusion of a supplementary allotment in the current fiscal year's (April 1,

Japan (Contd.):

1965-March 31, 1966) budget to initiate the program.

The Agency plans to collaborate with other Japanese government agencies in the development and improvement of submersible equipment, establish a site for training fishermen in diving techniques, and map areas on the Continental Shelf suitable for underwater fish farming. (Suisan Keizai Shimbun, May 15; Shin Suisan Shimbun Sokuho, May 18, 1965.)

Mexico

FISHING CENTER AT TAMPICO:

Although Tampico (on the Gulf of Mexico) is far from being Mexico's largest fishing port, it is an important supplier of fresh fishery products to northeastern Mexico, and it contributes significantly to the export market.

Tampico originally was noted for its blue crabs, which are called "jaibas." Although production has fallen off, Tampico still provides about a third of the Mexican blue crab production, and no visitor would think of leaving the city without a taste of this delicacy.

Tampico is also the leading producer of red snapper--the most popular high-priced fish in all Mexico. Annual landings of red snapper in Tampico during 1958-1961 averaged 1,222,000 pounds. Some of the red snapper catch is exported to the United States.

The red snapper fleet at Tampico consists of about 80 vessels. Some are diesel-powered 40-footers that remain on the fishing grounds as long as a week; others are open canoes, powered with outboard motors, that make 1-day trips. All red snapper fishing is done with lines. The larger vessels use large hand-powered steel reels to haul their monofilament lines.

Tampico's two shrimp-freezing plants accounted for 1.4 percent of Mexico's shrimp production in 1963. During 1957-1963, annual average landings of shrimp at Tampico were 2 million pounds live weight. Most of the production is exported to the United States as frozen headless shrimp in 5-pound cartons. The small rock shrimp, which are taken incidentally with the predominant catch of large brown shrimp, are cooked, headed, and peeled, and then shipped to the Mexico City market for the shrimp cocktail trade.

Fig. 1 - Shrimp trawlers moored alongside dock of Tampico freezer plant.

Fig. 2 - Some of the 50-vessel Tampico shrimp trawling fleet while in port.

The shrimp fleet at Tampico consists of about 50 trawlers. A few are Texas vessels that came to Tampico years ago before Mexican legislation banned imported shrimp vessels. Five are steel craft built in Tampico. The remainder are wooden vessels, built mostly in Tuxpan, Veracruz. The shrimp vessels fish close to home and seldom stay at sea as long as 10 or 12 days. The usual trip is no more than 6 days--much less than at most Mexican ports. Tampico shrimp have a reputation for being in very good condition when landed.

As most trawling is done at night, the shrimp fishermen take advantage of daylight hours to hand line for red snapper. The availability of these high-priced fish and the willingness of the Tampico shrimp plants to han-

Mexico (Contd.):

dle finfish, contrary to usual practice at many ports, provide all concerned with additional income. The shrimp trawlers at Tampico are individually owned and are manned by members of fishermen's cooperatives.

Tampico considers itself the "oyster capital" of Mexico since it is the closest large city to Laguna Tamiahua, Mexico's largest oyster-producing area. The Mexican total oyster harvest averaged 42 million pounds live weight annually in 1961-63. By volume, oysters rank second only to shrimp as Mexico's most important fishery product. Whereas most of the shrimp is exported, practically all of the oyster harvest is consumed within Mexico. Oyster bars are featured in every seacoast town and in all the larger inland cities--and 87 percent of their supply comes from Laguna Tamiahua, much of it funneled through Tampico. Practically all of the oysters are shipped live to market. Familiar sights at seafood restaurants and "ostionerias" are crews of oyster shuckers with their piles of freshly opened shells.

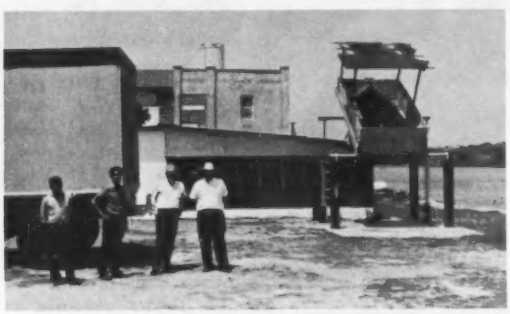

Fig. 3 - Oyster-processing and freezing plant at Tampico. Oysters processed there come from Laguna Tamiahua and are shipped to Brownsville, Tex.

Mexico's only oyster freezing and exporting plant is located in Tampico. The plant packs frozen shucked oysters in plastic containers of 3-pound capacity. The frozen oysters are shipped by truck to Brownsville, Tex.

The Mexican Bureau of Fisheries is constructing a new marine biological station at Tampico because of its importance as a fishery center. The new station, which will replace a temporary laboratory, was scheduled for completion in May or June 1965. (Regional Fisheries Attache, United States Embassy, Mexico, D.F., April 26, 1965.)

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FISHING INDUSTRY OF OAXACA MAKES EXCELLENT PROGRESS:

The Government-controlled Decentralized Fishing Enterprise of the State of Oaxaca in southern Mexico was established and dedicated on May 29, 1964. The purpose of the enterprise is to develop that State's fisheries and relieve the serious shortage of animal protein in the diet of the people of Oaxaca. With a coastline of 500 kilometers (311 miles) and three fishing ports, State officials believed Oaxaca could be self-sufficient in providing fishery products to its people. Since its establishment, the State enterprise has made rapid progress and has made available to the people more fish and fish products as part of their diet.

From the viewpoint of seafood in the diet, the capital city of Oaxaca is typical of dozens of small cities in Latin America. The people, unable to obtain seafood in quantity were not accustomed to eating it, and probably were not aware of their own protein deficiency. The factors leading to such a situation are not uncommon. They include the distance from the seacoast and large lakes, and also because the population of 75,000 is too small to provide a profitable market for private enterprise. The one developed fishing port of Salina Cruz in the State of Oaxaca, although only 170 miles away by good highway, is a shrimp fishing port which produces high-priced shrimp for export, and its food-fish production can all be absorbed by the cluster of nearby cities. The other fishing ports are tiny undeveloped villages which until recently lacked even poor road connections with the city of Oaxaca. As a result, like in so many other places, the only fishery products available were dried shrimp, imported dried fish, and some local dried fish of variable quality.

The State Governor decided to change that situation and started with a modest program which could be financed locally and could be expanded as the need grew. He chose as general director of the program a leading citizen who was already operating successful businesses and civic activities. The aim of the program was to supplement the dietary needs of the people with the lowest income by providing high protein food at the lowest cost.

Mexico (Contd.):

Fig. 1 - Note state of Oaxaca, south of Guerrero.

The Oaxaca State Legislature appropriated one million pesos (US$80,000), a nominal sum, but enough to do the job. A site for a cold-storage plant and retail shop was rented and the building was completely rebuilt and equipment installed. Three trucks were purchased--a 5-ton highway truck for hauling fresh fish from the coast, a delivery van for hotels, hospitals, and other institutions, and a general service pick-up truck. Meanwhile, the program's general director and others visited fishery production and distribution plants throughout the country to obtain ideas. Some dozen young men were recruited and sent to one of the big markets in Mexico City for training in fish handling. They were also trained in truck operation, how to clean and freeze fish, wait on customers, and how to operate the freezer and cold-storage plant.

The State also received advice and help from Mexico's National Consultative Fisheries Commission and the Bureau of Fisheries, the regional fisheries officer of the Food and Agriculture Organization (FAO), the National Bank for the Development of Cooperatives, and the Secretariats of Health and Marine.

The retail store in Oaxaca, with its freezer and cold-storage plant, is the heart of the project. There people from the city and its surrounding market area can buy a good variety of fresh and frozen fish and shellfish at fixed low prices. The response to the project has been excellent and has been helped by an advertising campaign which is geared to the national "eat-more-fish" program. During the first three months of the program, sales totaled $12,000 and since then have increased considerably.

The people, being accustomed to imported dried fish, have also responded well to new dried fishery products which now constitute a

Mexico (Contd.):

large share of total sales. Experimental packs of canned fish, usually in combination with rice or vegetables and with the traditional seasoning of Oaxaca, show great promise. The dried and canned products will prove particularly useful as the program expands into the smaller towns where refrigeration facilities are lacking.

A secondary objective of the program is to improve the living conditions of the people in the fishing villages, while at the same time insuring a steady supply of fish. The two principal villages of Puerto Angel and Puerto Escondido, each with its surrounding fish camps on coast and lagoon, are about 165 miles from the city of Oaxaca, on separate more or less parallel roads. Under another State program both roads have been improved and the trip over very mountainous terrain can be made in 5 or 6 hours. Until the outset of the program, the facilities of both those villages were primitive. Fishing was done only from canoes, and mostly still is. The fishermen had no assurance of a market and therefore had no incentive. At the beginning, the plant in Oaxaca could seldom obtain enough fish from the two villages and had to send its truck to the Gulf Coast of Veracruz to buy fish it needed.

Plans to improve conditions at both those villages include construction or improvement of small wharves and some channel dredging. The fishermen's cooperative at Puerto Angel has been reorganized, and a new cooperative at Puerto Escondido has been formed. Loans are being arranged with the National Bank for the Development of Cooperatives for larger fishing vessels and for motorizing existing craft. Also, a practical fishing school is planned. A pilot fish-salting plant at Puerto Escondido may later lead to the establishment of others. A local young man has been sent on a scholarship to study at the Institute of Marine Sciences in Veracruz, and on his return will be stationed on the coast to advise the fishermen.

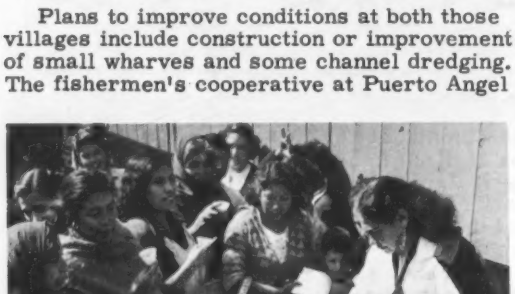

Fig. 2 - A fish-cookery demonstration in a Mexican marketplace. Samples of the dish prepared are distributed together with recipes.

The result so far has been an increase in the total daily consumption of fishery products in the city of Oaxaca from 100 to 500 kilograms (220 to 1,102 pounds), during the first three months, which was believed would continue to increase.

The results of the program were felt to far outweigh the cost which was given as: (1) State appropriation $80,000 with total spent through August 31, 1964, $92,000; (2) investment in plant, including conversion and equipment, most of which had to be imported, $45,000; (3) purchase of three trucks, $15,000; (4) operations through August 31, 1964, including salaries, rent, utilities, purchase of fish, supplies, advertising, and studies at other plants, $32,000; and (5) sale of fish, $12,000. (Regional Fisheries Attache, U. S. Embassy, Mexico, March 30, 1965.)

Note: See Commercial Fisheries Review, April 1964 p. 63.

Morocco

EXTENDED TUNA FISHING VENTURE SHOWS PROMISING RESULTS:

A small fleet of Moroccan tuna vessels in early 1965 sailed as far south as the Ivory Coast, over 2,000 miles from their home port of Agadir. The venture may be a breakthrough in extending the short range of Morocco's fishing fleet. Following is a summary of the expedition as given by one of its promotors and published in La Vie Economique, April 9, 1965:

Seven Moroccan vessels sailing out of Agadir have carried out a tuna fishing expedition of several months duration from Senegal to the Ivory Coast. The project was a cooperative venture between private vessel owners and an Agadir cannery. Although relatively modest in terms of modern commercial

Morocco (Contd.):

fishing, it was a serious experimental effort to improve Morocco's fishing and canning industry. Canned fish is the third most important Moroccan export, but the industry is handicapped by its dependence upon an uncertain supply of fish.

The small Moroccan tuna expedition began to fish for red (bluefin) tuna off Senegal in January 1965 and took a good catch of tuna, mackerel, and anchovy. When the tuna disappeared from Senegalese waters in mid-January, operations were shifted to warmer waters off the Ivory Coast. A British freezership was engaged to accompany the small fleet. By the end of March 1965, a total of 360 metric tons of fish (mostly tuna, mackerel, and anchovy) had been caught.

The Moroccans are well aware that their vessels must be improved and better equipped for deep-sea tuna fishing. Also needed is a mothership equipped with freezing facilities and radio and radar. Such a mothership accompanying the tuna vessels could provide information on the movements of tuna schools, and process and store the catch.

The Moroccan vessels that took part in the extended expedition were inferior to the modern vessels of the other countries operating in the area. In addition, the Moroccan crews could not match the skill of their foreign counterparts. However, that was due primarily to the lack of proper equipment and experience. The Moroccans had no practical experience in offshore tuna fishing along the coast of West Africa. They had to learn their trade on the job. During the expedition, the Moroccans reportedly adapted themselves to their tasks and handled their nets well. They also demonstrated that a Moroccan crew can spend extended periods of time at sea.

The expedition was described as a useful step in Morocco's efforts to develop a modern fishing industry. (United States Embassy, Rabat, April 21, 1965.)

* * * * *

NEW PLANT TO PRODUCE FISH PROTEIN CONCENTRATE:

Full-scale production of fish protein concentrate (FPC) was scheduled to begin in late May 1965 at the recently completed Moroccan plant at Agadir. The plant is expected to use 50 metric tons of sardines a day for a daily output of 6.5 to 7 tons of FPC. Total production during the 220-day fishing season could reach 1,500 tons, according to an official of the Moroccan Government. The project is a joint enterprise of private capital and the Moroccan Government.

Machinery at the new plant underwent trials during a break-in period in early May 1965. Results were said to be encouraging. (United States Embassy, Rabat, May 4, 1965.)

Note: See Commercial Fisheries Review, June 1965 p. 65.

Nicaragua

FISHING LIMITS OF 200 MILES CLAIMED:

Nicaraguan Presidential Decree No. 1-L, establishing a national fishing zone "between the coast and a line parallel to the same situated 200 nautical miles at sea" on both the Atlantic and Pacific Coasts, became effective on publication in La Gaceta, No. 82, April 8, 1965. The new decree declares that any act of fishing carried out within the "national fishing zone" is subject to Nicaragua's "General Law on the Exploitation of Natural Resources," and its complimentary laws (i.e., the "Special Law on the Exploitation of Fish," of March 3, 1961) and those which may be decreed in the future.

Norway

CANNED FISH EXPORTS, YEAR 1964 AND JANUARY 1965:

Preliminary data show that Norway's total exports of canned fishery products in 1964 were up about 5 percent from the previous year due mainly to larger shipments of canned brisling.

Norwegian Exports of Principal Canned Fishery Products

	1964	1963
	(Metric Tons)	
Brisling	7,046	5,368
Smoked small sild	14,384	14,927
Kippered herring	3,264	3,149
Soft herring roe	1,141	719
Shellfish	1,623	1,547
Other fishery products	3,565	3,881
Total	31,023	29,591

During January 1-23, 1965, Norwegian canned fish exports totaled 2,067 tons (414 tons brisling, 1,230 tons small sild, and 423 tons other fishery products), according to a preliminary report. In the same period of January 1964, exports were 1,926 tons (417 tons brisling, 949 tons small sild, and 560 tons other fishery products).

The Norwegian 1965 fishing season for "big sild" started in February and 14,897 standard cases had been canned as of February 13, 1965, compared with 24,192 standard cases in the same period of 1964. (Norwegian Canners Export Journal, March 1965.)

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LOFOTEN COD FISHERY DOWN IN 1965:

Norway's 1965 Lofoten cod fishery during the spawning season yielded a catch of only 19,500 metric tons valued at US$4.2 million, a decrease of 4,100 tons from 1964 and down 9,000 from 1963. The average ex-vessel price (liver and roe included) was 1.55 kroner a kilogram or 9.8 U. S. cents a pound.

The main reason given for the declining catches of spawning cod in Norwegian waters is said to be overexploitation of the Arctic cod stocks in the Barents Sea. (United States Embassy, Oslo, April 24, 1965.)

Note: See Commercial Fisheries Review, May 1965 p. 81.

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WINTER HERRING FISHERY, 1965:

The 1965 Norwegian fishery for winter herring ended on March 27 with a catch of 2,443,000 hectoliters (227,199 metric tons) as compared with 3,078,000 hectoliters (286,254 tons) in 1964. The catch did not fulfill the high hopes set at the end of the opening week of the winter herring fishery in mid-February when 150,000 tons were landed.

The lower 1965 catch was due to unfavorable weather conditions and also because the herring failed to show up at traditional spawning grounds in the Vestfjord. More than 90 percent of the catch was taken by purse seiners. About 52,359 tons of herring were sold for human consumption as fresh fish, and for freezing, canning, and salting. Reduction plants received less fish from the winter herring fishery than the previous year--about 77 percent of the catch as compared with 81 percent in 1964. (United States Embassy, Oslo, April 12, 1965.)

Note: See Commercial Fisheries Review, May 1965 p. 83.

Pakistan

FISHERIES INVESTMENT OPPORTUNITY:

Ganisons Industries Ltd., a Karachi importing firm which entered the fish processing and freezing field in 1964, is seeking the participation of a United States investor prepared to invest about Rs 1 million (US$208,000) to expand the firm's shark-liver oil plant. Dr. Mohamed Hussein, Managing Director of Ganisons Industries, planned to visit the United States in early May 1965 to meet interested investors.

Sharks abound in Pakistan waters, yet there are no facilities at present in the country for processing shark meat, skin, and fins. This would appear to offer an opportunity for a sizable shark-processing industry in Pakistan, and Dr. Hussein believes there is a market for shark-liver oil, frozen shark meat, and shark-fin soup in Europe and the United States.

An added incentive to foreign investors in the Karachi firm would be the possibility of exporting fishery products under Pakistan's Export Bonus Scheme. Under that scheme, an exporter is entitled to receive import licenses amounting to about 30 percent of the foreign exchange earned through exports. Exemption from certain Pakistan taxes might also be available to investors in the shark-processing industry.

Pakistan (Contd.):

Ganisons Industries enjoys a good business reputation in Pakistan business and government circles. (United States Embassy, Karachi, April 21, 1965.)

Peru

FISH MEAL INDUSTRY TRENDS, EARLY SPRING 1965:

Peruvian anchoveta landings, fish meal output, and fish meal prices were all at high levels at the start of the second quarter.

Peruvian price quotations in early May 1965 for July-December delivery of fish meal were running as high as US$147 f.o.b. Peruvian ports.

Peruvian fish meal output in the first quarter of 1965 totaled 508,000 metric tons, up about 2 percent from the same period of 1964. Exports during January-March 1965 of 465,000 tons were up almost 20 percent from the 389,000 tons shipped in the first quarter of 1964. A good inventory position at the start of 1965 contributed to the increase in exports.

But the Peruvian Government remains concerned about the long-term prospects for the industry and has issued a decree declaring that no additional licenses will be issued for the expansion or construction of new fish-meal plants.

Scientists at the Peruvian Marine Institute report warm water continues to move into the normally cold anchoveta fishing grounds. The question still hanging over the industry is what effect the warm water and the heavy catch of "peladilla" (young fish) will have on the availability of anchoveta when the season picks up again in October, after the normal third quarter slump. Data through the first half of April 1965 point to a catch during the first half of the year approaching, if not exceeding, that of last year. (United States Embassy, Lima, May 9, 1965.)

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MARINE OIL SUPPLY AND DISPOSITION, 1961-1964:

Fish Oil: Peruvian production of fish oil in 1964 showed only a small increase over 1963. Output in 1964 was held down by the relatively low oil yield of the record anchoveta catch.

Peruvian fish oil production makes up most of the available supply since carry-over stocks are usually small and imports are insignificant (table 1).

Table 1 - Peruvian Supply and Disposition of Fish Oil[1], 1961-1964

	[2]1964	1963	1962	1961
	(Metric Tons)			
Supply:				
Opening stocks, Jan. 1	5,917	4,905	2,308	5,439
Production	160,000	154,871	150,784	118,886
Total supply[3]	165,917	159,776	153,092	124,325
Disposition:				
Exports	110,559	125,477	127,969	102,306
Apparent domestic disappearance:				
Edible consumption	9,000	7,000	5,000	4,500
Industrial use	26,358	21,382	15,218	15,211
Closing stocks, Dec. 31	20,000	5,917	4,905	2,308

1/Does not include data on whale oil and sperm oil.
2/Estimated.
3/Imports are not included since they are relatively insignificant and complete data are not available. The Peruvian Ministry of Finance and Commerce and Customs reported Peruvian imports of inedible fish oil in 1964 as 541 tons of hydrogenated fish oil and 53 tons of cod-liver oil.

Domestic consumption of fish oil is rising in Peru, but exports are still the dominant factor in the industry. Peruvian exports of fish oil in 1964 totaled 110,559 metric tons

Peru (Contd.):

with a value of S377 million (US$14.1 million), as compared with exports in 1963 of 125,477 tons valued at S217 million ($8.1 million). For 1964, that was a decline of 12 percent in quantity, but a gain of 74 percent in value. Rising prices for fish oil prevailed on the world market in 1964.

Data on Peruvian fish oil exports by country of destination are not yet available for 1964, but in 1963 the leading buyer was the Netherlands followed by the United Kingdom, West Germany, and Denmark (table 2).

Table 2 - Peruvian Exports of Marine Oil by Country of Destination, 1963

Commodity and Country of Destination	Quantity	Value	
	Metric Tons	1,000 Soles	US$ 1,000
Fish Oil:			
United States	629	1,812	67.6
Belgium	337	542	20.2
Colombia	7,213	21,659	807.6
Denmark	11,215	15,207	567.0
Ecuador	81	295	11.0
France	2,265	6,216	231.8
West Germany	20,660	33,755	1,258.6
United Kingdom	20,712	33,844	1,261.9
Netherlands	54,851	93,675	3,492.7
Italy	68	295	11.0
Japan	250	844	31.5
Norway	5,082	6,424	239.5
Sweden	2,051	2,749	102.5
Total fish oil	125,477	217,317	8,102.9
Sperm Oil:			
United States	8,579	32,640	1,217.0
Netherlands	500	1,984	74.0
Total sperm oil	9,079	34,624	1,291.0
Whale Oil:			
Netherlands	400	901	33.6

Source: Peruvian Ministry of Finance and Commerce and Customs.

Whale and Sperm Oil: Peruvian exports of sperm oil in 1964 amounted to 4,388 tons valued at S17.1 million ($636,084), as compared with 9,079 tons valued at S34.6 million ($1.3 million) in 1963. Exports of whale oil in 1964 amounted to only 22 tons valued at S134,000 ($4,996), as compared with 400 tons valued at S901,000 ($33,600) in 1963. (Agricultural Attache, United States Embassy, Lima, April 15, 1965.)

Notes: (1) Peruvian Soles 26.82 equal US$1.00.
(2) See Commercial Fisheries Review, Nov. 1964 p. 105, and Aug. 1964 p. 83.

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EXPORTS OF PRINCIPAL MARINE PRODUCTS, 1963-1964:

Item	1964			1963		
	Qty.	Value		Qty.	Value	
	Metric Tons	Million Soles	US$ 1,000	Metric Tons	Million Soles	US$ 1,000
Fish meal	1,426,119	3,845.3	143,481	1,159,300	1/	1/
Fish oil	110,559	377.3	14,078	125,500	217.0	8,700
Fish (frozen, canned, etc.)	28,943	225.3	8,407	1/	1/	1/
Sperm oil	4,338	17.1	638	9,079	34.6	1,300
Whale meal	2,391	5.0	186	1/	1/	1/

1/Not available.
Note: F.o.b. values converted at rate of 26.8 soles equal US$1.00.
Source: Callao Customhouse and other sources.

Portugal

CANNED FISH EXPORTS, 1963-64:

Portugal's total exports of canned fish in oil or sauce in 1964 were down slightly from the previous year. Sardine shipments--accounted for 79 percent of the total canned fish exports in 1964--showed a small increase. But there was a decline in exports of tuna, mackerel, and anchovy fillets.

Portuguese Canned Fish Exports, 1963-1964

Product	1964		1963	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In oil or sauce:				
Sardines	55,272	2,909	53,484	2,815
Chinchards	3,305	174	2,134	112
Mackerel	5,349	214	6,323	253
Tuna & tunalike	2,097	70	3,887	129
Anchovy fillets	3,247	325	4,811	481
Others	665	35	437	23
Total	69,935	3,727	71,076	3,813

Portugal's principal canned fish buyers in 1964 were Germany with 14,017 metric tons, the United Kingdom 9,113 tons, Italy 8,138 tons, France 6,627 tons, the United States 5,990 tons, and Belgium-Luxembourg 4,476 tons. Germany's purchases of canned fish from Portugal in 1964 increased 10 percent from those in 1963. Purchases by the United Kingdom and France were also up. But purchases by the United States and Italy in 1964 were down 16 and 31 percent, respectively. (Conservas de Peixe, February 1965.)

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CANNED FISH PACK, 1963-1964:

Portugal's total pack of canned fish in oil or sauce in 1964 was up 22 percent from 1963 due to an expanded sardine pack. The gain

Portugal (Contd.):

Portuguese Canned Fish Pack, 1963-1964				
Product	1964		1963	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In oil or sauce:				
Sardines	70,209	3,695	49,644	2,613
Chinchards	1,542	81	3,363	177
Mackerel	4,211	169	6,736	269
Tuna & tunalike	5,931	196	5,907	197
Anchovy fillets	3,002	300	4,170	417
Others	737	39	600	32
Total	85,632	4,480	70,420	3,705

was partly offset by a smaller pack of chinchards, mackerel, and anchovy fillets. (Conservas de Peixe, February 1965.)

South Africa Republic

FISH PROTEIN CONCENTRATE DEVELOPED:

A fish protein concentrate has been developed by the Fishing Industry Research Institute of the South Africa Republic, according to a report in the South African Parliament. The new product is said to be a stabilized fish flour which retains an attractive fish flavor after months of storage. It can be used to prepare fish cakes or, in small quantities, to enrich cereal products. (South African Digest, April 16, 1965.)

Spain

FISHERY TRENDS AT VIGO, JANUARY-MARCH 1965:

Landings and Prices: Fishery landings at the Port of Vigo, Spain, in January-March 1965 totaled 13,552 metric tons valued at 190.8 million pesetas (US$3.2 million), down 49 percent in quantity and 24 percent in value from landings in the last quarter of 1964. As compared with January-March 1964, the first quarter 1965 landings were 13.5 percent less in quantity and the value dropped 16.9 percent. Catches are seasonally low during the first part of the year because of bad weather, and also because sardines and tuna (yellowfin) are scarce on the fishing grounds.

In addition to the fresh fish landings, the freezer-trawler fleet out of Vigo landed 8,550 tons of frozen fish (over 7,000 tons were small hake) valued at 157 million pesetas ($2.6 million). This compares with 3,686 tons of frozen fish landed in the first quarter of 1964. In 1964 a total of 22,444 tons of frozen fish was landed with a value of 404 million pesetas ($6.7 million). This was above the estimate of 20,000 tons made earlier in the year by the Vigo firm handling frozen fish.

A number of fishing vessel operators reported they were having difficulties in getting crews. Fishermen were believed emigrating in growing numbers to better paying jobs aboard foreign vessels.

Canned Fish Industry: There was very little fish canning activity during the period. An indication of the rate at which the canning industry worked (well below 10 percent of ca-

Table 1 - Landings and Average Ex-Vessel Prices of Selected Species at Vigo, January-March 1965 with Comparisons									
Species	1965			1964					
	January-March			October-December			January-March		
	Quantity	Avg. Price		Quantity	Avg. Price		Quantity	Avg. Price	
	Metric Tons	Pesetas/Kilo	US$/Lbs.	Metric Tons	Pesetas/Kilo	US$/Lbs.	Metric Tons	Pesetas/Kilo	US$/Lbs.
Octopus	3,834	5.07	3.8	1,126	6.51	4.9	906	7.09	5.4
Horse mackerel	1,617	4.67	3.5	3,239	5.03	3.8	1,934	4.69	3.5
Small hake	1,615	38.02	28.8	1,946	31.12	23.5	4,503	26.47	20.0
Cuttlefish	692	11.51	8.7	392	9.37	7.1	484	6.99	5.3

Table 2 - Distribution of Fishery Landings at Vigo, January-March 1965 with Comparisons			
Period	Shipped Fresh to Domestic Markets	Canned	Other Distribution (Smoking, Drying, Fish Meal, etc.) and Local Consumption
	(Metric Tons)		
1st Quarter 1965	7,113	1,109	5,330
4th Quarter 1964	11,445	8,439	6,735
1st Quarter 1964	11,139	890	3,643

Spain (Contd.):

pacity) was the amount of fish purchased, which was only about 8 percent of the total landings for the quarter.

The marketing situation was somewhat improved during the first part of 1965. This was probably due to the increase in the rate of tax rebate on exports from 6 percent to 11 percent of the net value of the merchandise exported. That measure was implemented early in 1965, and was made retroactive to July 1, 1964. (United States Consulate, Vigo, April 19, 1965.)

Note: See Commercial Fisheries Review, March 1965 p. 90.

Sweden

FISH MEAL AND MARINE OIL INDUSTRY TRENDS, FISCAL YEARS 1963/64 AND 1964/65:

Fish Meal: Imports account for the bulk of the Swedish fish meal supply. Shipments were up sharply from Norway, Iceland, and Denmark in 1964, although Peru continued as the leading supplier. Most of the Swedish fish meal supply is used for animal feed. Demand is increasing because of the expansion of the broiler industry.

Marine Oils: Sweden is also dependent on foreign sources for the bulk of her marine oil

Table 1 - Swedish Supply and Disposition of Fish Meal, Fiscal Years 1/ 1963/64 and 1964/65

Item	2/ 1964/65	1963/64
	(1,000 Metric Tons)	
SUPPLY:		
Production	7.5	7.1
Imports	32.0	30.8
DISPOSITION:		
Exports	1.0	0.2
Domestic consumption (animal feed)	40.5	37.7

1/Period from July 1 to June 30.
2/Estimated.

Table 2 - Swedish Imports of Fish Meal, Calendar Years 1963-1964

Commodity Country of Origin	1964	1963
	(Metric Tons)	
Herring Meal:		
United States	16	-
Norway	10,108	3,133
Denmark	4,785	2,422
Iceland	912	20
Peru	99	-
Total herring meal	15,921	5,575
Unclassified Fish Meal:		
United States	270	195
Denmark	290	410
Iceland	5,121	1,338
United Kingdom	343	688
Chile	-	3,542
Peru	17,274	18,139
Norway	270	-
Canada	49	-
Total unclassified fish meal	23,617	24,312

Table 3 - Swedish Supply and Disposition of Edible Marine Oils, Fiscal Years 1/ 1963/1964 and 1964/1965

Item	2/ 1964/63	1963/64
	(1,000 Metric Tons)	
SUPPLY:		
Opening Stocks 2/, July 1:		
Whale oil	1.5	2.0
Herring oil	1.0	1.0
Other marine oils	11.8	16.0
Production (herring oil)	4.5	4.0
Imports:		
Whale oil	-	5.9
Other marine oils	40.0	48.3
Total supply	58.8	77.2
DISPOSITION:		
Exports	3/	3/
Domestic Disappearance:		
Food uses (all marine oils)	26.0	25.4
Other disappearance (all marine oils)	3/	3/
Closing Stocks 2/, June 30:		
Whale oil	0.5	1.5
Herring oil	0.5	1.0
Other marine oils	17.0	11.8

1/Period from July 1 to June 30.
2/Estimated.
3/Not available.
Note: Production and imports are stated on a crude oil basis. The quantity used for food is stated in terms of refined oil. Stocks include crude and refined oils.

Table 4 - Swedish Imports of Marine Fats and Oils, Calender Years 1963-1964

Commodity and Country of Origin	1964	1963
	(Metric Tons)	
Whale Oil, Raw:		
Norway	-	5,878
Herring Oil, Raw:		
Norway	2	17
Denmark	616	330
Iceland	-	7,533
West Germany	798	-
Total herring oil	1,416	7,880
Medicinal Oils:		
Norway	2,059	1,714
Denmark	92	265
Iceland	283	275
Japan	-	45
West Germany	72	-
United Kingdom	26	-
Total medicinal oils	2,532	2,299
Hydrogenated marine fats and oils	340	504
Unclassified Marine Oils:		
United States	24,768	33,384
Norway	189	267
Denmark	44	1,213
West Germany	4,064	7,733
Peru	-	698
Iceland	1,659	-
Total unclassified marine oils	30,724	43,295

Sweden (Contd.):

supply. Imports from the United States have become increasingly important in recent years as shipments from other countries have declined sharply. United States shipments also declined in 1964, but still accounted for over 70 percent of total Swedish marine oil imports.

Swedish import taxes on edible marine oil (and vegetable oils) in early 1965 totaled 84 ore a kilo (7.4 U.S. cents a pound), as compared with import taxes a year earlier totaling 115 ore a kilo (10.2 U.S. cents a pound).

In fiscal year 1963/64, the Swedish margarine industry consumed 24,274 metric tons of refined marine oil, which was 95 percent of the total edible marine oils used by the domestic food industry. Most of the remaining 5 percent went into baking aids and lard.

Table 5 - Swedish Exports of Marine Fats and Oils, Calendar Years 1963-1964

Commodity and Country of Destination	1964	1963
	(Metric Tons)	
Herring Oil, Raw:		
Norway	3,461	2,941
Other countries	209	90
Total herring oil	3,670	3,031
Hydrogenated Marine Fats & Oils:		
United States	25	-
Norway	1,826	2,012
Denmark	5,289	5,462
Finland	1,246	678
United Kingdom	3,498	2,120
Ireland	1,170	2,019
France	500	634
Austria	756	928
Czechoslovakia	-	1,313
Other countries	439	1,225
Total hydrogenated marine fats and oils	14,749	16,391

Sweden maintains a sizable export trade in hydrogenated marine fats and oils. Leading buyers are Denmark, the United Kingdom, Norway, Finland, and Ireland. Raw herring oil is also exported by Sweden, mainly to Norway. (Agricultural Attache, United States Embassy, Stockholm, April 15, 1965.)

Note: See Commercial Fisheries Review, June 1963 p. 90.

Taiwan

FISHERIES TRENDS IN 1964:

Landings in 1964: Taiwan's fishery landings in 1964 totaled 376,398 metric tons, an increase of 7.3 percent over 1963. In 1964 there were increases in all of Taiwan's fisheries except the outer coastal fishery which dropped 12.7 percent from the previous year.

Taiwan's Fisheries Production, 1963-64

Type of Fishery	1964	1963
	(Metric Tons)	
Offshore and deep-sea fisheries	126,765	119,880
Inshore coastal fisheries	161,151	144,023
Outer coastal fisheries	32,191	36,854
Fish culture	56,291	49,972
Total	376,398	350,729

The total fish production target for 1965 has been set at 388,000 tons under that country's 4-year development plan.

Fig. 1 - Tuna displayed before auction at Taiwan's Kaohsiung fish market.

Fresh-Water Fish Culture: Taiwan at one time imported from Hong Kong some 15 million Chinese carp fingerlings a year valued at about US$100,000 for stocking fresh-water ponds. The species were grass carp (Ctenopharyngodon idellus), silver carp (Hypophthal-

Fig. 2 - Silver carp being injected with pituitary hormone to induce rapid spawning.

Taiwan (Contd.):

michthys molitrix), and big head carp (Aristichthys nobilis). In 1964, fish culturists in Taiwan succeeded in artificially propagating those fish by hormone-induced spawning and hatching the fertilized eggs in running water. It is estimated that 3 to 5 million fingerlings were produced commercially that year. With the artificial propagation technique further refined, it is expected that sufficient fry will be produced in 1965 to meet all of Taiwan's needs.

Vessel Construction: The construction of the thirteen 300-ton tuna long-liners and three 100-ton tuna long-liners financed by a World Bank loan is under way, and most of them are expected to be completed and ready to begin fishing by the end of 1965.

Fig. 3 - Shows launching of a newly built Taiwan tuna long-liner.

Fig. 4 - Fish market at Makung on Pescadores Island, Taiwan.

A newly formed private fishing firm in Taiwan has obtained a loan of NT$34 million (US$850,000), half of which is from the American-Chinese Joint Commission of Rural Reconstruction and half from the Cooperative Bank of Taiwan, to finance the construction of ten 120-ton tuna long-liners. When completed, they will fish in the Western Indian Ocean using Port Louis (Mauritius), in the Mascarene Islands group, as the base of operation.

Note: See Commercial Fisheries Review, June 1965 p. 78; April 1965 p. 51; April 1964 p. 69.

Tonga Islands

LARGE SHRIMP CAUGHT IN SOUTH PACIFIC LAGOON WATERS:

Large shrimp (heads on) measuring from 4 inches and up were caught for the first time in the lagoon at Tongatapu, the main island of the Tonga Islands group in the South Pacific Ocean. They were caught in a Japanese treble-mesh net in the deeper areas of the lagoon.

The Tonga Government has been interested in the fishing potential of the lagoon and tested the area with that type Japanese net which had been set at various depths. (Pacific Islands Monthly, January 1965.)

U.S.S.R.

JAPAN LAUNCHES SECOND IN SERIES OF FACTORYSHIPS FOR SOVIETS:

A Japanese shipbuilder announced the launching at Yokohama on April 22, 1965, of the fish factoryship Slavjansk (19,000 gross tons), the 2nd of 8 such vessels of the same class for V/O Sudoimport in the Soviet Union. The first of the series was the Spassk launched January 14, 1965.

Both the Spassk and the Slavjansk have the following specifications: length between perpendiculars 160 meters (525 feet), breadth moulded 24 meters (79 feet), depth moulded 14.8 meters (48.5 feet), main diesel engine 5,500 brake horsepower at 125 r.p.m., cruising speed 14 knots, gross tonnage 19,000 tons, and deadweight tonnage 10,000 tons.

The Slavjansk will be equipped with modern equipment for fish freezing, canning, and salting. It will also have a reduction plant to process fish meal and oil. The new factoryship is expected to have a daily processing capacity of 350-400 metric tons of herring or 200-250 tons of groundfish such as cod and ocean perch.

U.S.S.R. (Contd.):

The Slavjansk is scheduled for delivery to the Soviets in August 1965. (Fisheries Attache, United States Embassy, Tokyo, April 30, 1965.)

* * * * *

FREEZER-TRAWLER "GEIZER" DELIVERED TO SOVIETS BY DANISH SHIPYARD:

The 2,570-ton freezer-trawler M/S Geizer was delivered to Sudoimport, Moscow, April 27, 1965. The vessel is another in a series of 15 freezer-trawlers for the U.S.S.R. being built by a Danish shipyard to the following specifications: length between perpendiculars 91 meters (298.5 feet), breadth 16 meters (52.5 feet), and deadweight tonnage 2,550 to 2,600 tons. The first vessel in the series was the M/S Skryplev launched May 10, 1962. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, May 5, 1965.)

M/S Geizer on trial run. Speed on loaded trials was 14 knots.

Note: See Commercial Fisheries Review, June 1965 p. 79; April 1965 p. 87; October 1964 p. 56.

United Kingdom

SUPPLY AND DISPOSITION OF FROZEN PROCESSED FISHERY PRODUCTS, 1963-1964 AND 1954:

British consumption of frozen processed fishery products in 1964 was up 8 percent from 1963, according to a report issued by the White Fish Authority, London. Since 1954, British consumption of frozen fishery products has increased more than fourfold.

Although production of frozen fishery products in Britain has more than doubled since 1954, the domestic supply has been insufficient to meet the demand. As a result, imports have increased sharply, rising from 1,638 long tons in 1954 to 23,439 tons in 1964. British imports of frozen fishery products increased 25 percent from 1963 to 1964, due mainly to larger purchases of the bulk or institutional packs.

British Supply and Disposition of Frozen Processed Fishery Products, 1964 with Comparisons

	1964	1963	1954
	(Long Tons)		
SUPPLY:			
Domestic Production:			
Institutional pack	29,890	27,445	1/
Consumer pack	30,941	30,617	1/
Total domestic production	60,831	58,062	25,929
Imports:			
Institutional pack	14,969	10,451	1/
Consumer pack	8,470	8,297	1/
Total imports	23,439	18,748	1,638
DISPOSITION:			
Domestic Consumption:			
Institutional pack	42,660	39,153	1/
Consumer pack	37,393	34,748	1/
Total domestic consumption	80,053	73,901	17,320
Exports 2/:			
Institutional pack	7,293	7,385	1/
Consumer pack	4,149	4,003	1/
Total exports	11,442	11,388	8,008

1/Breakdown not available.
2/Includes direct exports and also ship's stores (765 tons in 1964 and 922 tons in 1963) and consumption abroad by British Government personnel (646 tons in 1964 and 545 tons in 1963).
Source: British White Fish Authority Economics and Statistics Branch, London.

British exports of frozen processed fishery products have been much more stable, amounting to 8,008 tons in 1954 and increasing only moderately to 11,442 tons in 1964.

Note: See Commercial Fisheries Review, July 1964 p. 79.

* * * * *

GOVERNMENT SUBSIDY FOR FISHING VESSEL IMPROVEMENT:

The British Government has authorized grants of up to 30 percent of the cost of certain types of improvements to fishing vessels "holding out a clear promise of economic return." Details of the plan were announced April 2, 1965, by the White Fish Authority.

The types of improvement which qualify for assistance are those designed primarily to improve catching capacity and the handling of fish in the interests of quality and efficiency.

The scheme will assist owners who want to convert vessels for boxing fish at sea, and

United Kingdom (Contd.):

will contribute--up to a maximum grant of £1,250 (US$3,500)--to the cost of modifying trawl winches and winch drives.

It will apply to certain engine, propeller, and gear improvements to increase power when towing fishing gear.

The scheme will also apply to the fitting of fish-washing machines where this is not already fleet practice and where it is part of a more comprehensive and ambitious improvement project. It will help a fishing vessel owner insulate his fish holds and provide refrigeration, fit shelter decks, modify fuel stowage arrangements, strengthen his vessel for navigation in ice, and provide de-icing equipment.

It will also assist conversion from long-lining to trawling.

Grants may be approved for up to 25 percent of improvement costs on vessels of 80 feet or more, and up to 30 percent of cost on smaller craft. (Fishing News, London, April 9, 1965, and Fish Trades Gazette, April 10, 1965.)

Republic of Viet-Nam

FISHERIES TRENDS, 1964 AND EARLY 1965:

The commercial fisheries catch in South Viet-Nam increased from 165,000 metric tons in 1959 to 342,775 tons in 1963 and 363,000 tons in 1964, according to preliminary data. The assistance of the United States Agency for International Development contributed to the increased landings. Vietnamese fisheries are believed to have a good potential for further development.

Considerable emphasis has been placed on developing export markets for Vietnamese frozen shrimp, fresh fish, and processed fish in the form of dried, salted, and pickled products. Over the past several years export contracts for mackerel, pompano (spiny food-fish), threadfin, and other Vietnamese fishery products have been signed with commercial distributing firms in Singapore, Bangkok, and Honk Kong. Those fishery export contracts in 1964 had a value in excess of VN piastres 32.6 million (US$448,260). In addition, pilot shipments of frozen shrimp were exported during 1964 to Hong Kong, Japan, France, the Netherlands, Switzerland, and the United States.

Exports of frozen shrimp during February 1965, as reported by the Vietnamese fisheries Directorate, amounted to 36.3 tons (including shipments to the United States of 20.3 tons, France 7.0 tons, Japan 8.0 tons, and Switzerland 1.0 tons). Exports of processed shrimp (other than frozen) in February 1965 included 3.5 tons shipped to France. (United States Embassy, Saigon, April 30, 1965.)

Note: See Commercial Fisheries Review, July 1964 p. 80, and July 1963 p. 96.

Yugoslavia

RESULTS OF TUNA MARKET SURVEY BY JAPANESE:

In 1964 a survey of the Yugoslav tuna market was made by the Japanese Government agency, Japan External Trade Promotion Organization (JETRO). The survey report states, in part:

1. Yugoslavia has been purchasing frozen tuna from Japan and Turkey, but since 1963 Turkey has not supplied tuna to that country. In 1964 it was unofficially reported that Yugoslavia bought some tuna from Italy, but they are believed to be Japanese-caught fish.

2. Two firms monopolize tuna imports. One of the firms is tied up with 22 fish packing plants and is the only one engaged in exporting canned fishery products. The other firm operates two canneries, as well as retail stores.

3. Most of the canned fish production is exported. In 1964, only 8 percent of the production was diverted to the domestic market, consisting of low-quality packs, such as flake tuna and tuna in vegetable. Apparently, the

Yugoslavia (Contd.):

Government is pursuing a policy of promoting exports to acquire foreign funds so as to pay for the cost of the imported raw material.

4. Canned fish exports in 1963 totaled 8,551 metric tons. Of that quantity, 1,324 tons were exported to Czechoslovakia, 1,156 tons to Italy, 953 tons to West Germany, and 934 tons to Austria. In 1964, only 5 percent of canned fish exports went to eastern Europe, with 95 percent going to western Europe. In 1965, it is anticipated that 20 percent of the exports will be destined for the Soviet Union.

5. To promote exports, the Government is allowing an exchange rate of 750 dinar for one U.S. dollar to pay for imported frozen tuna, 1,215 dinar to one dollar for canned fish exported to western Europe, and 1,140 dinar to one dollar for canned fish exported to eastern Europe. This is comparable to an export subsidy of approximately 62 percent. (Suisan Tsushin, April 27, 1965.)

Editor's Note: The official exchange rate based on the International Monetary Fund is 750 Yugoslav dinars equal one U. S. dollar.

Note: See Commercial Fisheries Review, October 1964 p. 81.

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IMPORTS OF FISH MEAL AND OIL, 1962-1963 AND JANUARY-JUNE 1964:

Fish Meal: Yugoslav imports of fish meal increased sharply in January-June 1964 to 28,511 metric tons. Annual imports of fish meal amounted to only 23,387 tons in 1963 and 2,793 tons in 1962. Peru has been the leading supplier, accounting for total shipments in the first half of 1964 and also in the year 1962. In 1963, Peru supplied 19,387 tons and the United States shipped 4,000 tons.

Fish Oil: Yugoslav imports of inedible fish oil totaled 1,452 metric tons in the first half of 1964, as compared with annual imports of 1,640 tons in 1963 and 1,003 tons in 1962. Norway has been the main supplier with 1,120 tons of the total in January-June 1964 and 1,495 tons in the year 1963 and 670 tons in 1962, according to Yugoslav foreign trade statistics. (Agricultural Attache, United States Embassy, Belgrade, February 23, 1965.)

OCTOPUS A DELICACY IN NEW CALEDONIA

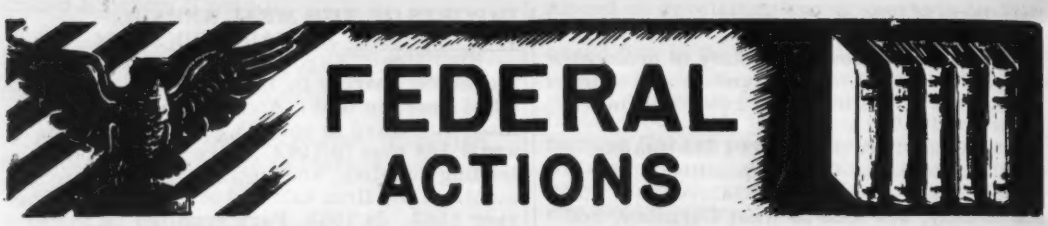
There are plenty of octopuses in Noumea's market in September--that is the season when they are easily found in reef holes at low tide. Even so they bring a good price because many in New Caledonia (French island and territory in Southwest Pacific) consider them a great delicacy.

Preparation of an octopus for the table is a muscle-developing job as it entails thrashing the animal against a rock, preferably immersed coral which is glass-hard, for half an hour to an hour. Without this, you might as well serve up a dish of plastic garden hose, according to the New Caledonians.

When boiled, the meat is white and tender and tastes like spiny lobster. The skin and suckers easily slip off the cooked meat.

Octopus can be served up in many ways. It may be chopped up and served with "vinaigrette" sauce of vinegar, oil, and garlic; or chopped up and served with mayonnaise or the various sauces that go with spiny lobster.

One of the best ways of presenting octopus is in Coquilles St. Jacques--the meat is minced and mixed with bread crumbs, seasoning, and garlic, put into imitation shells and baked in the oven. (Pacific Islands Monthly, September 1964.)



Civil Service Commission

MINIMUM EDUCATIONAL REQUIREMENTS FOR FEDERAL OCEANOGRAPHY POSITIONS REVISED:

Previously approved minimum educational requirements for Federal government positions in the Oceanography Series, GS-1360, have been superseded and revised by the U. S. Civil Service Commission, in accordance with Section 5 of the Veterans' Preference Act of 1944, as amended.

Identification of the superseded requirements, the revised requirements, the duties of the positions, and the reasons for the Commission's decision that the new requirements are necessary were published by the Commission in the Federal Register, May 26, 1965.

The former minimum educational requirements were established by the Commission and published in the Federal Register of August 28, 1964.

Complete details of the revised educational requirements for Federal oceanographer positions as published in the May 26, 1965, Federal Register follow:

CIVIL SERVICE COMMISSION

OCEANOGRAPHY SERIES

Minimum Educational Requirements

In accordance with section 5 of the Veterans' Preference Act of 1944, as amended, the Civil Service Commission has decided that previously approved minimum educational requirements for positions in the Oceanography Series, GS–1360, should be superseded by revised requirements. Identification of the superseded requirements, the revised requirements, the duties of the positions, and the reasons for the Commission's decision that these requirements are necessary are set forth below.

THE OCEANOGRAPHY SERIES, GS–1360 (ALL POSITIONS)

Superseded requirements. The following material supersedes that previously published in 29 F.R. 12407, August 28, 1964.

Minimum educational requirements. Candidates for these positions must have successfully completed A or B below:

A. A full 4-year course of study in an accredited college or university leading to a bachelor's degree with major study of at least 24 semester hours in oceanography or a related discipline such as physics, meteorology, geophysics, mathematics, chemistry, engineering, geology, or biology plus 20 semester hours in any combination of oceanography, physics, geophysics, chemistry, mathematics, meterology, and engineering sciences.

B. Major study at least 24 semester hours in oceanography, or a related discipline such as physics, meteorology, geophysics, mathematics, chemistry, engineering, geology, or biology plus 20 semester hours in any combination of oceanography, physics, geophysics, chemistry, mathematics, meteorology, and engineering sciences, combined with additional education and/or pertinent work experience in the field of oceanography totaling 4 years of education and experience. This combination of education and experience must have provided the candidate with professional knowledge and ability comparable to that required under paragraph A.

In either A or B above: Candidates who qualify on the basis of major study in biology or geology must show at least 6 semester hours in the major directly concerned with marine science, or in oceanography; candidates who qualify on the basis of other physical sciences or engineering, must show differential and integral calculus and at least 6 semester hours in physics.

Candidates for research positions must meet the requirements prescribed in paragraph A.

Duties. Oceanographers plan and conduct scientific surveys, and examine selected ocean data at sea or on land; they collect, analyze, evaluate, coordinate, and interpret information derived both scientifically and empirically from the ocean and its surroundings. Some oceanographers plan, organize, conduct and administer basic and applied research in laboratories at sea and on land. In general, these scientists are concerned with research on and studies of tides, sea ice, currents, waves and other ocean events in terms of their temperatures, densities, circulation, motion, sound propagation, transparency, and similar characteristics. They are also concerned with the interaction and relationships between the ocean bottom, sea and atmosphere, including animal or plant life in the ocean, as these affect the particular ocean phenomena under study.

Reasons for establishing requirements. The duties of these positions cannot be performed successfully without formalized training either in oceanography or in a combination of the basic physical sciences which provide fundamental scientific knowledges applicable or adaptable to exploring, examining and understanding ocean phenomena. Oceanographers at the minimum must have a thorough knowledge of basic scientific methods and procedures which may be adapted to oceanographic work. Appointees must have the ability to apply their professional and scientific knowledge to their work in order to solve specific problems, interpret and apply the results of research (both in oceanography and in the applicable basic sciences), or do oceanographic research. These knowledges can be acquired only through the successful completion of a directed course of study in an accredited college or university which has scientific libraries, well equipped laboratories, and thoroughly trained instructors who can evaluate the progress of the professional and scientific training competently.

UNITED STATES CIVIL SERVICE COMMISSION,
[SEAL] MARY V. WENZEL,
Executive Assistant to the Commissioners.

Note: See Commercial Fisheries Review, November 1964 p. 116.

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Department of the Interior

FISH AND WILDLIFE SERVICE

PENALTIES PROPOSED FOR VIOLATION OF REGULATIONS UNDER FISHERY PRODUCTS INSPECTION PROGRAM:

Notice of a proposed amendment by the Secretary of the Interior to Title 50, Code of Federal Regulations, Part 260, Processed Fishery Products, on debarment and suspension of fishery products inspection services to persons guilty of violations, was published in the Federal Register, May 26, 1965.

The purpose of the proposed amendments is to suspend or debar any person from the benefits provided under the Agricultural Marketing Act of 1946 when such person engages in activities which are in violation of the criminal section of the Act, or which abuse or adversely interfere with the successful conduct of the fishery products inspection program.

The notice of proposed amendment as published in the Federal Register, May 26, 1965, follows:

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[50 CFR Part 260]

PROCESSED FISHERY PRODUCTS

Debarment and Suspension of Inspection Services

Notice is hereby given that pursuant to section 203 and 205 of Title II of the Agricultural Marketing Act of 1946, 60 Stat. 1087, 1090, as amended, 7 U.S.C. sections 1622 and 1624 (1958), as transferred to the Department of the Interior by section 6(a) of the Fish and Wildlife Act of 1956, 70 Stat. 1122 (1956), 16 U.S.C. section 742e (1958), the Secretary of the Interior proposes to amend Title 50, Code of Federal Regulations by addition and deletion of sections that specifically apply to debarment and suspension of inspection services.

Subsection (h) of section 203 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1622(h)) provides criminal penalties for various specified offenses relating to official shields, marks or other identifications and devices for making such marks or identifications, issued or authorized under section 203 of said Act, and certain misrepresentations concerning the inspection or grading of fishery products under said section.

The purpose of these proposed changes is to suspend or debar any person from the benefits provided under the Act when such person engages in activities which are in violation of the criminal section of the Act or which abuse or adversely interfere with the successful conduct of the inspection program.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rulemaking process. Accordingly, interested persons may submit written comments, suggestions, or objections with respect to the proposed amendment to the Director, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service, Washington, D.C., 20240, within 30 days of the date of publication of this notice in the FEDERAL REGISTER.

The proposed addition and deletions of sections that specifically apply to debarment and suspension are as follows:

§§ 260.87, 260.89 [Deleted]

1. It is proposed that §§ 260.87 and 260.89 be deleted.

2. It is proposed that a new § 260.93 be added to read as follows:

§ 260.93 Debarment and suspension.

(a) *Debarment.* Any person may be debarred from using or benefiting from the inspection service provided under the regulations of this subchapter or under the terms of any inspection contract, and such debarment may apply to one or more plants under his control, if such person engages in one or more of the following acts or activities:

(1) Misrepresenting, misstating, or withholding any material or relevant facts or information in conjunction with any application or request for an inspection contract, inspection service, inspection appeal, lot inspection, or other service, provided for under the regulations of this subchapter.

(2) Using on a processed product any label which displays any official identification, official device, or official mark, when the label is not currently approved for use by the Director or his delegate.

(3) Using on a processed product any label which displays the words "Packed Under the Continuous Inspection of the U.S. Department of the Interior," or which displays any official mark, official device, or official identification, or which displays a facsimile of the foregoing, when such product has not been inspected under the regulations of this subchapter.

(4) Making any statement or reference to the U.S. Grade of any processed product or any inspection service provided under the regulations of this subchapter on the label or in the advertising of any processed product, when such product has not been inspected under the regulations of this subchapter.

(5) Making, using, issuing, or attempting to issue or use in conjunction with the sale, shipment, transfer, or advertisement of a processed product any certificate of loading, certificate of sampling, inspection certificate, official device, official identification, or official mark which has not been issued, approved, or authorized for use with such product by an inspector.

(6) Using any of the terms "United States," "U.S.," "Officially graded," "Officially inspected," "Government inspected," or words of similiar import or meaning, or using any official device, official identification, or official mark on the label, on the shipping container, or in the advertising of any processed product, when such product has not been inspected under the regulations of this subchapter.

(7) Using or attempting to use any certificate, certificate form, design, insignia, mark, shield, device, or figure which simulates in whole or in part any official mark, official device, official identification, certificate of loading, certificate of sampling, inspection certificate, or other official certificate issued pursuant to the regulations of this subchapter.

(8) Interfering or obstructing or attempting to interfere or obstruct any inspector or sampler in the performance of his duties under the regulations of this subchapter.

(9) Violating any one or more of the terms of any inspection contract or the provisions of the regulations of this subchapter.

(10) Engaging in acts or activities which destroy or interfere with the purposes of the inspection program or which have the effect of undermining the integrity of the inspection program.

(b) *Temporary suspension.* Whenever the Director has reasonable cause to believe that any person has engaged in any act or activity described in paragraph (a) of this section, and such act or activity would, in the opinion of the Director, cause serious and irreparable injury to the inspection program and services provided under the regulation of this subchapter, the Director may, without a hearing, temporarily suspend, either before or after institution of a debarment hearing, the inspection service provided under regulations of this subchapter or under any inspection contract for one or more plants under the control of such person for a period not to exceed sixty (60) days, except as herein provided for under this subsection. Notice of suspension shall be served by registered or certified mail, return receipt requested, and the notice shall specifically state those acts or activities of such person which are the basis for the suspension. The suspension shall become effective five (5) days after receipt of the notice by such person. Objection may be taken to the suspension by the filing of a petition for reconsideration with the Director, and such petition may be accompanied by supporting and relevant evidence and affidavits. The petition for reconsideration shall be ruled upon by the Director within twenty (20) days after receipt of such petition.

(1) If a debarment hearing is instituted against any person under suspen-

sion, such suspension may, in the discretion of the Director, be extended beyond the sixty (60) day period and remain in effect until a final decision on the debarment is rendered in accordance with the regulations of this section. Failure to institute a debarment hearing during a suspension period shall not preclude the institution of such a hearing at a later date.

(2) If a debarment hearing is instituted against any person not under suspension, the Director may, in accordance with the regulations of this subsection, temporarily suspend such person, and the suspension may, in the discretion of the Director, be extended beyond the sixty (60) day period and remain in effect until a final decision on debarment is rendered in accordance with the regulations of this section.

(3) All temporary suspensions shall terminate upon the rendering of a final decision on debarment, upon the dismissal of a debarment hearing, or upon the expiration of the sixty (60) day period, unless the sixty (60) day period has been extended by the Director as herein provided for.

(c) *Hearing Examiner.* All hearings shall be held before a Hearing Examiner, appointed by the Secretary or the Director.

(d) *Hearing.* If one or more of the acts or activities described in paragraph (a) of this section have occurred, the Director may institute a hearing to determine the length of time during which the person shall be debarred and those plants to which the debarment shall apply. No person may be debarred unless there is a hearing, as prescribed in this section, and it has been determined by the Hearing Examiner, based on evidence of record, that the one or more of the activities described in paragraph (a) of this section have occurred. Any debarment or suspension must be instituted within two (2) years of the time when such acts or activities described in paragraph (a) of this section occurred.

(e) *Notice of hearing.* The Director shall notify such person of the debarment hearing by registered or certified mail, return receipt requested. The notice shall set forth the time and place of the hearing, the specific acts or activities which are the basis for the debarment hearing, the time period of debarment being sought, and those plants to which the debarment shall apply. The hearing will be set for a time not less than 30 days but not longer than 120 days after receipt of the notice of hearing.

(f) *Time and place of hearing.* The hearing shall be held at a time and place fixed by the Director: *Provided, however,* The Hearing Examiner may, upon a proper showing of inconvenience, change the time and place of the hearing. Motions for change of time or place of the hearing must be mailed to or served upon the Hearing Examiner no later than 10 days before the hearing.

(g) *Right to counsel.* In all proceedings under this section, all persons and the Department of the Interior shall have the right to be represented by counsel, in accordance with the rules and regulations set forth in Title 43, Code of Federal Regulation, Part 1.

(h) *Form, execution, and service of documents.* (1) All papers to be filed under the regulations in this section shall be clear and legible; and shall be dated, signed in ink, contain the docket description and title of the proceeding, if any, and the address of the signatory. Five copies of all papers are required to be filed. Documents filed shall be executed by (i) the person or persons filing same, (ii) by an authorized officer thereof if it be a corporation or, (iii) by an attorney or other person having authority with respect thereto.

(2) All documents, when filed, shall show that service has been made upon all parties to the proceeding. Such service shall be made by delivering one copy to each party in person or by mailing by first-class mail, properly addressed with postage prepaid. When a party has appeared by attorney or other representative, service on such attorney or other representative will be deemed service upon the party. The date of service of document shall be the day when the matter served is deposited in the U.S. mail, shown by the postmark thereon, or is delivered in person, as the case may be.

(3) A person is deemed to have appeared in a hearing by the filing with the Director a written notice of his appearance or his authority in writing to appear on behalf of one of the persons to the hearing.

(4) The original of every document filed under this section and required to be served upon all parties to a proceeding shall be accompanied by a certificate of service signed by the party making service, stating that such service has been made upon each party to the proceeding. Certificates of service may be in substantially the following form:

> I hereby certify that I have this day served the foregoing document upon all parties of record in this proceeding by: (1) Mailing postage prepaid, (2) delivering in person, a copy to each party.
>
> Dated at ---------- this ------ day of ---------- 19 ...
>
> Signature ----------

(i) *Procedures and evidence.* (1) All parties to a hearing shall be entitled to introduce all relevant evidence on the issues as stated in the notice for hearing or as determined by the Hearing Examiner at the outset of or during the hearing.

(2) Technical rules of evidence shall not apply to hearings conducted pursuant to this section, but rules or principles designed to assure production of the most credible evidence available and to subject testimony to test by cross-examination shall be applied where reasonably necessary.

(j) *Duties of Hearing Examiner.* The Hearing Examiner shall have the authority and duty to:

(1) Take or cause depositions to be taken.

(2) Regulate the course of the hearings.

(3) Prescribe the order in which evidence shall be presented.

(4) Dispose of procedural requests or similar matters.

(5) Hear and initially rule upon all motions and petitions before him.

(6) Administer oaths and affirmations.

(7) Rule upon offers of proof and receive competent, relevant, material, reliable, and probative evidence.

(8) Control the admission of irrelevant, immaterial, incompetent, unreliable, repetitious, or cumulative evidence.

(9) Hear oral arguments if the hearing examiner determined such requirement is necessary.

(10) Fix the time for filing briefs, motions, and other documents to be filed in connection with hearings.

(11) Issue the initial decision and dispose of any other pertinent matters that normally and properly arise in the course of proceedings.

(12) Do all other things necessary for an orderly and impartial hearing.

(k) *The record.* (1) The Director will designate an official reporter for all hearings. The official transcript of testimony taken, together with any exhibits and briefs filed therewith, shall be filed with the Director. Transcripts of testimony will be available in any proceeding under the regulations of this section, at rates fixed by the contract between the United States of America and the reporter. If the reporter is an employee of the Department of the Interior, the rate will be fixed by the Director.

(2) The transcript of testimony and exhibits, together with all briefs, papers, and all rulings by the Hearing Examiner shall constitute the record. The initial decision will be predicated on the same record, as will the final decision.

(l) *Decisions.* (1) The Hearing Examiner shall render the initial decision in all debarment proceedings before him. The same Hearing Examiner who presides at the hearing shall render the initial decision except when such Examiner becomes unavailable to the Department of the Interior. In such case, another Hearing Examiner will be designated by the Secretary or Director to render the initial decision. Briefs, or other documents, to be submitted after the hearing must be received not later than twenty (20) days after the hearing, unless otherwise extended by the Hearing Examiner upon motion by a party. The initial decision shall be made within sixty (60) days after the receipt of all briefs. If no appeals from the initial decision is served upon the Director within ten (10) days of the date of the initial decision, it will become the final decision on the twentieth day following the date of the initial decision. If an appeal is received, the appeal will be transmitted to the Secretary who will render the final decision after considering the record and the appeal.

(2) All initial and final decisions shall include a statement of findings and conclusions, as well as the reasons or bases therefore, upon the material issues presented. A copy of each decision shall be served on the parties to the proceeding, and furnished to interested persons upon request.

(3) It shall be the duty of the Hearing Examiner, and the Secretary where there is an appeal, to determine whether the person has engaged in one or more of the acts or activities described in paragraph (a) of this section, and, if there is a finding that the person has engaged in such acts or activities, the length of time the person shall be debarred, and the plants to which the debarment shall apply. However, the Hearing Examiner may not terminate any temporary suspension imposed by the Director.

JOHN A. CARVER, JR.,
Under Secretary of the Interior.

MAY 21, 1965.

* * * * *

VESSEL DEFINITION AMENDMENT PROPOSED UNDER FISHING VESSEL MORTGAGE INSURANCE PROCEDURES:

Notice of a proposed amendment to Title 50, Code of Federal Regulations, Part 255, was published in the Federal Register, April 30, 1965. The proposed amendment would revise paragraph (a) of Sec. 255.2 (Fishing Vessel Mortgage Insurance Procedures) to read:

> (a) Fishing vessel. The term "fishing vessel" includes any vessel documented or to be documented as a fishing vessel of the United States which is designed to be used in catching fish, processing or transporting fish loaded on the high seas, or any vessel outfitted for such activity.

The purpose of the proposed revision is to change the definition of fishing vessel in the mortgage insurance regulations to conform with the definition provided for in the United States Fishing Fleet Improvement Act.

The proposed amendment relates to matters which are exempt from the rule making requirements of the Administration Procedure Act. However, interested persons were given until May 29, 1965, to submit written comments, suggestions, or objections with respect to the proposed amendment.

BUREAU OF COMMERCIAL FISHERIES

CONTRACT AWARDED FOR PROCESSING, PROMOTING, AND SELLING ALASKA SEAL SKINS:

A contract for processing, promoting, and selling Alaska seal skins for the account of the United States Government has been awarded the Fouke Fur Company, Greenville, S. C., announced Secretary of the Interior Stewart L. Udall, May 7, 1965. A Letter of Intent covering the contract was issued by the Interior Department, March 31. The new agreement is based on a proposal filed by the company in April 1964.

Salting fur seal skins on St. Paul Island, Alaska.

The Interior Secretary said the new pact is based on two major considerations. One provides that seven-eighths of the United States share of the raw seal skins harvested by the United States at the Pribilof Island rookeries from 1963-1967 will be delivered to the Fouke Company. The other relates to the retention of one-eighth of the skins by the Government for use in experimental processing contracts with other interested firms. Skins harvested in 1963 and 1964 were stored in Seattle, Wash., until terms of the new contract were reached.

Secretary Udall said the Interior Department continues to be concerned with improving processing techniques as well as developing competitive "know-how" in the handling of seal skins. "Therefore, we are having up to one-eighth of the skins retained by the Government for use in experimental processing and marketing contracts with other interested firms," he said. The Interior Department's Bureau of Commercial Fisheries, which manages the Pribilof Island herds, has invited proposals for experimental processing and qualified firms had until May 17, 1965, to respond.

The new Alaska seal skin contract authorizes the Fouke Fur Company to conduct the semiannual fur seal auctions through the spring of 1970.

Under terms of the North Pacific Fur Seal Conservation Convention, Canada and Japan each receive 15 percent of the annual seal skin harvest, including skins taken at rookeries managed by the Soviet Union. All four Convention countries are responsible for protecting the fur seals during their extensive migrations on the high seas.

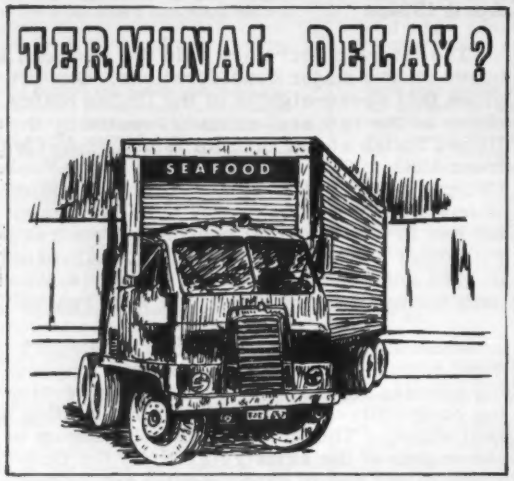
Note: See Commercial Fisheries Review, September 1964 p. 20; June 1964 p. 63.

Interstate Commerce Commission

TRUCK DETENTION CHARGES SET FOR THE NORTHEAST:

A final order was served May 7, 1965, by the Interstate Commerce Commission in I. C. C. Docket No. 33434, "Detention of Motor Vehicles--Middle Atlantic and New England Terri-

tory." Discussing the order, the Commission said, in part, "The purpose of the . . . detention rule is to discourage delays of carriers' vehicles at origins, stopoff points,



and destinations. The rule is not designed, as such, as a source of revenue. It is essentially an effort to reach unreasonable delays of carrier vehicles attributable to consignors, consignees, or their representatives . . . ."

The order established detention rules and charges that will apply in the Middle Atlantic territory (except New York short-haul territory), and between the Middle Atlantic and New England territories. The rule will not apply on household goods, commodities transported in bulk in tank trucks and in dump trucks, articles transported by heavy haulers, or articles picked up from or delivered to railroad cars; nor to the transportation of palletized shipments to the extent such shipments are subject to another rule.

Under the new detention rules, carriers were ordered to file amended tariffs with the Interstate Commerce Commission not later than July 5, 1965. After filing by the carriers, an additional notice to the public of at least 30 days is required before the new charges become effective.

Following are the new detention rules and charges:

DETENTION OF VEHICLES

This rule applies when carriers' vehicles ("vehicles" as used in this rule means straight trucks or tractor-trailer combinations, except that this rule will not apply to trailers without power units left by carrier at place of pickup or delivery of consignor, consignee, or other party designated by them) are delayed or detained at premises of consignor, consignee, or other places designated by consignor or consignee, subject to the following provisions:

SECTION I--GENERAL PROVISIONS

(a) This rule applies only to vehicles which have been ordered or used to transport shipments subject to truckload rates. If the shipment is moving on a rate subject to a stated minimum weight of 12,000 pounds or more, and such rate is not designated as a truckload rate, it will be considered a truckload rate for the purpose of applying this rule.

(b) This rule applies only when vehicles are delayed or detained at the places of pickup or delivery and only when such delay or detention is attributable to consignor consignee, or others designated by them.

(c) Free time for each vehicle will be as provided in Section III.

(d) After the expiration of free time as herein provided, charges as provided in Section IV will be assessed against the shipment.

SECTION II--COMPUTATION OF TIME

(a) The time per vehicle shall begin to run upon notification by the driver to the responsible representative of the consignor or consignee at the place of pickup or delivery of the arrival of the vehicle for loading or unloading, as the case may be, either on the premises designated by the consignor or consignee, or as close thereto as conditions on said premises will permit, and shall end upon completion of loading or unloading and receipt by the driver of a signed bill of lading or receipt for delivery, as the case may be, except as provided in paragraph (b) of this section. Time, if any, necessary to prepare a vehicle for loading or unloading, as the case may be, will be excluded from the computation of time.

Upon request of consignor or consignee, or others designated by them, carrier will enter into a reasonable prearranged schedule for arrival of the vehicle for loading or unloading.

Exception--When carrier makes a prearranged schedule with consignor or consignee, or others designated by them, at place of pickup or delivery for the arrival of the vehicle for loading or unloading and carrier is unable for any reason to maintain such schedule within 30 minutes, the time shall begin to run from the commencement of loading or unloading and not from the time of arrival of the vehicle. If carrier's vehicle arrives prior to scheduled time, the time shall begin to run from the scheduled time or actual time loading or unloading commences, whichever is earlier.

(b) Computations of time are subject to, and are to be made within the normal business (shipping or receiving) day at the designated premises at place of pickup or delivery, except, if carrier is permitted to work beyond this period, such working time shall also be in-

cluded. When loading or unloading is not completed at the end of such day, time will be resumed at the beginning of the next such day, or when work the next is actually begun by carrier, if earlier. When loading or unloading carries through a normal meal period, meal time, not to exceed one hour, will be excluded from computation of time.

SECTION III--FREE TIME

Free time shall be as follows:

Column A		Column B	
Actual Weight in Pounds per Vehicle	Free Time in Minutes	Actual Weight in Pounds per Vehicle Stop	Free Time in Minutes per Vehicle Stop
Less than 24,000	240	Less than 10,000	90
24,000 and less than 36,000 . .	300	10,000 and less than 20,000. .	180
36,000 or more	360	20,000 and less than 24,000. .	240
		24,000 and less than 36,000. .	300
		36,000 or more	360

Note: Column A - applies to vehicles containing truckload shipments requiring only one vehicle, or to fully loaded vehicles containing truckload shipments requiring more than one vehicle, except as provided in Column B.

Column B - applies to last vehicle used in transporting overflow truckload shipments requiring two or more vehicles, or to vehicles containing truckload shipments stopped for completion of loading or partial unloading.

SECTION IV--CHARGES

When the Delay per Vehicle Beyond Free Time is:	The Charge for Vehicle will be:
1 hour or less	$10.00
Over 1 hour but not over 75 minutes . . .	12.50
Over 75 minutes but not over 90 minutes .	15.00
Over 90 minutes but not over 105 minutes	17.50
Over 105 minutes but not over 120 minutes	20.00
Over 120 minutes but not over 135 minutes	22.50
Over 135 minutes but not over 150 minutes	25.00
Over 150 minutes but not over 165 minutes	27.50
Over 165 minutes but not over 180 minutes	30.00
Over 180 minutes	1/

1/$30.00 plus $2.50 for each 15 minutes or fraction thereof over 180 minutes.

SECTION V

A record of the following information must be maintained by the carriers and kept available at all times:

(a) Name and address of consignor, consignee, or other party at whose place of business freight is loaded or unloaded.

(b) Identification of vehicles tendered for loading or unloading.

(c) Date and time of notification of the arrival of the vehicle for loading or unloading.

(d) Date and time loading or unloading begins.

(e) Date and time loading or unloading is completed.

(f) Date and time vehicle is released for departure by consignor, consignee, or by other party at place of pickup or delivery after loading or unloading is completed.

(g) Total actual weight of shipment loaded or unloaded.

(h) Whether vehicles are tendered under a prearranged schedule for loading or unloading.

(i) When vehicles are tendered under a prearranged schedule for loading or unloading, date and time specified therefor.

SECTION VI

Nothing in this rule shall require a carrier to pick up or deliver freight at hours other than such carrier's normal business hours.

Note: See Commercial Fisheries Review, March 1965 p. 98.

Department of Labor

WAGE AND HOUR AND PUBLIC CONTRACTS DIVISIONS

HEARINGS TO BE HELD ON INDUSTRY WAGE RATES IN AMERICAN SAMOA:

An Industry Committee was appointed by the Secretary of Labor to recommend minimum hourly wage rates under the Fair Labor Standards Act for all industries in American Samoa. The committee began its public hearings on July 12, 1965, in Pago Pago, American Samoa.

Present minimum wage rates in American Samoa are $1.00 an hour for workers engaged in fish canning and processing. Tuna canneries there will be included in the hearings since the minimum wage for tuna canneries in American Samoa is less than the mainland minimum wage.

The Act authorizes such committees to recommend for American Samoan industries minimum hourly wage rates at or below the statutory minimum rates that apply on the mainland. Composed of residents of both American Samoa and the Continental United States, these committees are equally representative of employers, employees, and the public.

The formal notice of appointment by the Secretary of Labor was published in the Federal Register, May 4, 1965.

Note: See Commercial Fisheries Review, March 1965 p. 100.

Department of the Treasury

BUREAU OF CUSTOMS

TUNA CANNED IN BRINE
IMPORT QUOTA FOR 1965:

The quantity of tuna canned in brine which may be imported into the United States during calendar year 1965 at the 12½-percent rate of duty is limited to 66,059,400 pounds (or about 3,145,685 standard cases of 48 7-oz. cans). This is 8.5 percent more than the 60,911,870 pounds (about 2,900,565 cases) in 1964; 4.6 percent more than the 63,130,642 pounds (about 3,006,221 cases) in 1963; 11.9 percent over the 59,059,014 pounds (about 2,812,000 cases) in 1962; and 15.7 percent more than the 57,114,714 pounds in 1961. Compared with the 53,448,330-pound limit in 1960, the 1965 quota is 23.6 percent greater and is 26.1 percent more than the 52,372,574-pound limit set in 1959. Any imports of tuna canned in brine in excess of the 1965 quota will be dutiable at 25 percent ad valorem under item 112.34, Tariff Schedules of the United States.

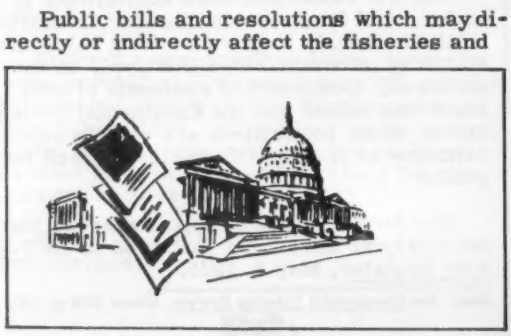
The quota for 1965 is based on the United States pack of canned tuna during the preceding calendar year (1964), as reported by the U. S. Fish and Wildlife Service.

The 1965 tariff-rate quota was published in the Federal Register, page 5799, April 24, 1965, by the Bureau of Customs of the U. S. Department of the Treasury.

Note: See Commercial Fisheries Review, June 1964 p. 64.

Eighty-Ninth Congress
(First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.



ANADROMOUS FISH CONSERVATION: Subcommittee on Merchant Marine and Fisheries of Senate Committee on Commerce, May 11-12, 1965, held hearings on S. 909, to authorize the Secretary of the Interior to initiate with several States a cooperative program for the conservation, development, and enhancement of the Nation's anadromous fish, and for other purposes (see "FISHERIES LEGISLATION, 1965").

Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries held hearings June 2-3, 1965, on H. R. 3927, similar to S. 909.

ANTIDUMPING ACT AMENDMENT: S. 2045 (Harte and 22 others) introduced in Senate May 26, 1965, to amend the Antidumping Act, 1921; to Committee on Finance. Same day 88 bills were introduced in House (H. R. 8510-H. R. 8597); also H. R. 8275 (Cederberg) May 19; H. R. 8619 (Flood) May 27; H. R. 8705 (Baring), H. R. 8711 (Pool), H. R. 8717 (Green of Pa.), June 2; and H. R. 8776 (Byrne of Pa.) June 3; to Committee on Ways and Means. Rep. Herlong in Congressional Record, May 26, 1965 (pp. 11260-11264) pointed out that the 1965 Antidumping Act Amendment would clarify standards to be applied by the Treasury Department and the Tariff Commission in their respective "dumping" and "injury" determinations; tighten loopholes which have been discovered and exploited over the years; assure fairer, more effective procedures in the administration of the Act; accommodate some opposition views; ratify recent Treasury regulations on its dumping functions where these are not inconsistent with the Act as it would be amended.

H. Res. 405 (Curtis) introduced in House June 1, 1965, expressing the sense of the House that the President should take such action as may be necessary for the preparation of an international agreement to harmonize the operation and administration of the antidumping laws of all the countries; to Committee on Ways and Means.

Rep. Curtis, in extension of remarks in Congressional Record, June 1, 1965 (pp. 11645-11647) said that the proposed changes in the U. S. antidumping program would not advance the goal of fairer and increased international trade. He stated that as one of four congressional members of the U. S. delegation to the current GATT negotiations, he was particularly concerned with the international trade problems posed by the present administration of the U. S. antidumping program.

AQUATIC PLANT CONTROL: Hearings held May 18, 1965, by the Senate Committee on Public Works on S. 1380, to provide for the control of obnoxious aquatic plants in navigable and allied waters.

Introduced in House, H. R. 8395 (Sickles) May 24, 1965; H. R. 8656 May 28; similar to S. 1380.

COMMODITY PACKAGING AND LABELING: Senate Committee on Commerce, May 17, 1965, resumed its hearings on S. 985, to prevent unfair or deceptive

methods of packaging or labeling of commodities distributed in interstate commerce. Hearings concluded May 18.

Introduced in House H. R. 8475 (McGrath) May 26, H. R. 8764 (Helstoski) June 3, 1965; to Committee on Interstate and Foreign Commerce; similar to S. 985.

FISHERIES LOAN FUND AMENDMENT: House May 12, 1965, and Senate May 13, 1965, received a letter from the Secretary of the Interior, transmitting a draft of proposed legislation to amend section 4 of the Fish and Wildlife Act of 1956 to authorize the Secretary of the Interior to make loans for the financing and refinancing of new and used fishing vessels; in House to Committee on Merchant Marine and Fisheries; in Senate to Committee on Commerce.

S. 2013 (Magnuson) introduced in Senate May 21, 1965, to amend section 4 of the Fish and Wildlife Act of 1956; to Committee on Commerce. Sen. Magnuson in Congressional Record, May 21, 1965 (p. 10801), pointed out that the proposal authorizes the Secretary of the Interior to make loans for, among other things, the purchase or construction of a commercial fishing vessel without regard to whether the vessel will replace an existing vessel. Proposal does not continue the unused authority to make loans for research into the basic problems of the fisheries.

FISHERIES LEGISLATION, 1965 (Pacific Salmon Conservation, Fishery Loan Fund Extension, and Conservation and Development Program for Anadromous Fish): Hearings before the Merchant Marine and Fisheries subcommittee of the Committee on Commerce, United States Senate, 89th Congress, 1st session on S. 909, to authorize the Secretary of the Interior to initiate a program for the conservation, development, and enhancement of the Nation's anadromous fish in cooperation with the several states, S. 998, to extend the term during which the Secretary of the Interior is authorized to make fishery loans under the Fish and Wildlife Act of 1956, and for other purposes, and S. 1734, to conserve and protect Pacific Salmon of North American origin, Serial 89-10, May 11-12, 1965, 194 pp., printed. Contents include texts and departmental reports (Agriculture, Interior, Justice, Treasury, Comptroller General), agency comments, statements and letters of various Federal and state officials, business officials, and organizations and associations.

FISHERIES LOAN FUND EXTENSION: Subcommittee on Merchant Marine and Fisheries of Senate Committee on Commerce, May 11-12, 1965, held hearings on S. 998, extending and liberalizing terms of fisheries loans which may be made under the Fish and Wildlife Act (see "FISHERIES LEGISLATION, 1965"). Senate Committee on Commerce, May 24, 1965, approved for reporting S. 998.

Hearings held by Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries May 26, 1965, on H. R. 4227, similar to S. 998. Subcommittee in executive session May 27, ordered bill reported favorably to the full committee.

H. R. 8657 (King of Calif.) introduced in House May 28, 1965; to Committee on Merchant Marine and Fisheries; similar to H. R. 4227.

FISHING VESSEL REPLACEMENT RESERVE FUND: Rep. Keith in Congressional Record, May 12, 1965 (pp. A2347-A2348) pointed out, among other things, that his bill H. R. 7956 is a companion bill to Sen. Bartlett's S. 1858. This legislation would extend to the nonsubsidized portion of the merchant fleet and the fishing industry, the same tax privileges now enjoyed by subsidized operators. That is, to allow them to establish tax-deferred capital reserve funds for rebuilding old vessels or building badly needed new ones.

Introduced in House, H. R. 8495 (Garmatz) May 26, and H. R. 8722 (Rivers of Alaska) June 3, 1965; to Committee on Merchant Marine and Fisheries; similar to H. R. 7956.

FOOD MARKETING NATIONAL COMMISSION: National Commission on Food Marketing Extension of Time to File Report: Hearing before the Committee on Agriculture, House of Representatives, 89th Congress, 1st session, on H. R. 5720, March 25, 1965, Serial G, 29 pp., printed. Contents include statements and correspondence of various Federal officials, associations, and the National Commission on Food Marketing.

H. R. 5702 (extending for 1 year, to 1966, the date on which the National Commission on Food Marketing shall make its final report to the President and the Congress) was signed May 15, 1965, by the President (P. L. 89-20). Fund authorization increased from $1.5 million to $2.5 million.

Rep. Sullivan in Congressional Record, May 18, 1965, (pp. A2472-A2474) inserted an article from the May 15, 1965, issue of Business Week, entitled "Marketing: Why Farmer's Share Is Shrinking--Food Marketing Commission Has Started A Sweeping Study of the Food Industry--Its Goal: To Find Out Why Costs to Consumers Go Up, Return to Farmers Go Down." Article gives an objective report on the reason for the Commission's establishment and the methods being followed in the development of their study.

HALIBUT COMMISSION: S. 1975 (Magnuson) introduced in Senate May 14, 1965, to amend the Northern Pacific Halibut Act in order to provide certain facilities for the International Pacific Halibut Commission; to Committee on Commerce. Sen. Magnuson in Congressional Record, May 14, 1965 (p. 10132) said that the purpose is to authorize the construction of quarters for the Halibut Commission on or adjacent to the University of Washington campus. He inserted a letter from the Department of State endorsing this proposal.

HALIBUT WEEK: Sen. Magnuson May 7, 1965, submitted a concurrent resolution (S. Con. Res. 34) authorizing and requesting the President of the United States to proclaim May 15 to May 21 as National Halibut Week; to Committee on the Judiciary.

HEALTH, EDUCATION AND WELFARE APPROPRIATIONS, FY 1966. House Committee on Appropriations reported favorably (H. Rept. 272) Apr. 29, 1965, H. R. 7765. As reported allows additional funds for the Federal water pollution control program. House passed bill May 4, 1965, and referred it to the Senate Committee on Appropriations May 5.

HIGHWAYS AND FISH AND WILDLIFE PROTECTION: Introduced in Senate S. 1974 (Metcalf and 2 others), May 14, 1965; S. 2074 (Scott) June 2, to amend title 23 of the United States Code relating to highways for the purpose of protecting fish and wildlife and recreation resources; to Committee on Public Works. Sen. Metcalf in Congressional Record, May 14, 1965 (p. 10131), stated the

purpose is to protect fish and wildlife and recreation resources and to make uniform the sound and wise procedures which have been outlined by the Federal Highway Administrator in his instructions to the Bureau of Public Roads. The bill would require that the Secretary of any other Federal department consult with the Secretary of the Interior to determine that the surveys, plans, specifications, and estimates for any project constructed with Federal funds are satisfactory in the interests of conserving fish and wildlife and recreation resources, in the area of the proposed project.

IMPORT RESTRICTIONS ON FISHERY PRODUCTS: Subcommittee on Merchant Marine and Fisheries of Senate Committee on Commerce held hearings May 11-12, 1965, on S. 1734, to conserve and protect North Pacific salmon. (see "FISHERIES LEGISLATION, 1965").

Senate Committee on Commerce, May 18, 1965, in executive session, ordered favorably reported S. 1734. Committee reported (S. Rept. 194) bill to Senate May 19.

S. Rept. 194, Conservation of U. S. Fishery Resources (May 18, 1965, report from the Committee on Commerce, U. S. Senate, 89th Congress, 1st session, to accompany S. 1734), 7 pp., printed. Committee reported bill favorably with amendments. Discusses purpose, general discussion, committee consideration, opposition to the bill, cost of the legislation, agency comments, and changes in existing law.

Senate May 19, 1965 passed with committee amendments S. 1734. (Before amendment referred to "North Pacific Salmon.") Motion to reconsider was tabled. Sen. Magnuson in Congressional Record, May 19, 1965 (pp. 10592-10595), inserted a table showing U. S. imports of fishery products from Japan by commodity for 1963--amounted to almost $100 million. Bill as amended provides that whenever the Secretary of Interior determines that fishing vessels of a foreign country are being operated to the detriment of the domestic fishery conservation programs, the President may increase duty--up to 50 percent of the July 1, 1934, level--on any fishery product in any form from the offending country. (Previously shown under "Salmon Import Restriction.")

By a voice vote the House May 20, 1965, adopted H. Res. 397, providing for the return to the Senate of S. 1734 on the basis that the bill "contravenes the first clause of the seventh section of the first article of the Constitution of the United States, and is an infringement of the privileges" of the House.

House Committee on Ways and Means announced May 24 that as soon as its schedule will permit, it will consider legislation introduced by a number of House Members designed to conserve and protect Pacific salmon of North American origin. Several such bills (H. R. 7187, H. R. 7269, H. R. 7483, and H. R. 7661) are now pending in the Committee. The Chairman stated that a number of Members of Congress had expressed concern that fishing vessels of foreign origin are being used or may be used in the conduct of their fishing operations in a manner or under circumstances which diminish the effectiveness of domestic conservation programs of Pacific salmon of North American origin, and had requested that appropriate legislative action be taken to conserve and protect this American natural resource. No specific date set.

INTERIOR DEPARTMENT: Senate Committee on Commerce, May 18, 1965, in executive session, ordered favorably reported the nomination of Stanley A. Cain, of Michigan, to be Assistant Secretary of the Interior for Fish and Wildlife.

Senate May 19, 1965, confirmed the nomination of Stanley A. Cain.

INTERIOR DEPARTMENT APPROPRIATIONS: FY 1966: By unanimous vote May 26, 1965, Senate passed with amendments H. R. 6767, fiscal 1966 appropriations for the Department of the Interior and related agencies after adopting committee amendments en bloc, which were thereafter considered as original text for purpose of further amendment. Senate insisted on its amendments, asked for conference with House, and appointed conferees. Sen. Proxmire in Congressional Record, May 26, 1965 (p. 11348) commended the subcommittee for its consideration of the problems being faced by the Great Lakes' declining fishing industry--the subcommittee set aside $400,000 for an accelerated development program, and the full committee added an additional $30,000 in recognition of the losses that have taken place over the past two years. Same day Sen. Bartlett (p. 11349) stated that the committee also approved $300,000 for disaster research under Federal aid for fishery research development, in addition to $100,000 voted by the House for oyster disease research in the four Mid-Atlantic States.

NORTH AMERICAN FISHERIES CONFERENCE: Sen. Bartlett in Congressional Record, May 27, 1965 (pp. 11472-11477), inserted the remarks of Donald L. McKernan, Director of U. S. Bureau of Commercial Fisheries, summarizing the papers presented at the North American Fisheries Conference Apr. 30 through May 5, 1965.

NORTH PACIFIC FISHERIES CONVENTION: Sen. Bartlett (Congressional Record, June 7, 1965, pp. 12244-12245) in the Senate discussed Japanese violation of the 1953 North Pacific Fisheries Convention--Japanese fishing vessels early in June were sighted east of 175° west longitude, and one vessel was seized by the U. S. Coast Guard.

OCEANOGRAPHY SEA-GRANT COLLEGES: Sen. Pell (Congressional Record, May 7, 1965, pp. 9567-9569) spoke in the Senate concerning the need for more research and development of the oceans, calling for initial support of Federal and State governments. He presented an idea which he feels is a necessity for the survival of the fishing industry--sea-grant colleges, similar in concept to the land-grant colleges which have done so much for agriculture. Within the sea-grant universities could be colleges of aquaculture, marine aquacultural experiment stations, fishery extension services, and seagoing fishing port agents.

OIL POLLUTION OF THE SEA, 1961: Introduced in Senate S. 2017 (Magnuson) May 24, to Committee on Commerce; introduced in House H. R. 8760 (Garmatz) June 3, 1965; to Committee on Merchant Marine and Fisheries; to amend the provisions of the Oil Pollution Act, 1961 (33 U. S. C. 1001-1015), to implement the provisions of the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954, as amended, and for other purposes; to Committee on Commerce.

Sen. Magnuson in Congressional Record, May 24, 1965 (pp. 10946-10947), pointed out that the proposed amendments to the Act would redefine the types and sizes of ships regulated, redefine the extent to which

ships must record the discharge of oil, extend the zones in which discharge of oil is prohibited, and make other necessary changes. Would bring existing statutory provisions into agreement with the 1954 Convention. Would revise the scope of application, so that the law applies to all seagoing vessels of any type whatsoever of American registry or nationality except--(a) tankers under 150 gross tons and other ships of under 500 gross tons; (b) ships in the whaling industry when actually employed on whaling operations; (c) ships navigating the Great Lakes and tributary waters as specified; and (d) naval ships and ships for the time being used as naval auxiliaries.

ORDERLY MARKETING ACT 1965: S. 2022 (Muskie and 8 others), introduced in Senate May 24, 1965, to provide for the orderly marketing of articles imported into the United States, to establish a flexible basis for the adjustment by the U. S. economy to expanded trade, and to afford foreign supplying nations a fair share of the growth or change in the U. S. market; to Committee on Finance. Sen. Muskie in Congressional Record, May 24, 1965 (pp. 10955-10957), said that the proposed legislation, "The Orderly Marketing Act of 1965," is designed to protect those industries injured or threatened with injury by a massive flood of low-cost imports. This orderly marketing concept would allow us to "overcome unfair competition, through international agreements or through unilateral--but flexible--quotas. And it allows foreign competitors to share in the growth of our economy . . . ." Section 3 outlines the procedure for filing petitions for relief under the Orderly Marketing Act. In addition, subsection (b) provides that a determination is to be made whether increased quantities of imports are a factor contributing to a condition of economic impairment. The determination of whether or not increased imports are a "factor" in creating such a condition is made conclusive by subsection (b). Two standards are adopted, both of which must exist in order for an affirmative determination to be made: (1) Imports must have increased by more than 50 percent in the aggregate during the 5 calendar years immediately preceding the filing of the petition; and (2) Imports must equal or exceed 15 percent of domestic production during the calendar year immediately preceding the filing of the petition. Section 5 provides for the imposition of orderly marketing limitations in the event of an affirmative finding by the Secretary of Commerce under subsection 3(e). The quotas are to be established on one or two bases, either at an annual level equal to 15 percent of domestic production for the preceding year or at the average annual level of importation for the 5 years immediately preceding the proclamation. Section 5 offers the President an alternative to proclaiming the quantitative limitations specified in section 4. The alternative contemplates negotiations with principal foreign supplying nations whereby import levels would be established, and in connection with this alternative the most-favored-nation principle is abandoned. Section 6 creates a mechanism for allocation of U. S. import quotas among countries, generally on a historic level. Further relief would be available under section 7 of the orderly marketing bill. This provision permits automatic certification of firms and workers in an industry as to which a proclamation limiting imports has been made whereby they might apply for adjustment assistance as under title III of the Trade Expansion Act.

Introduced in House, H. R. 8426 (Bates), H. R. 8428 (Burke) and H. R. 8449 (Philbin) May 25, 1965; H. R. 8474 (Keith) and H. R. 8505 (Price) May 26; H. R. 8773 (Robison) June 3; arranging for orderly marketing of certain imported articles; to Committee on Ways and Means.

SALMON: Rep. Pelly in the House (Congressional Record, June 1, 1965, p. 11636), stated that he had wired President Johnson urging him to intervene personally and seek Japanese cooperation in support of American fishery conservation of north Pacific red salmon.

SMALL BUSINESS DISASTER ASSISTANCE: Additional Assistance for Disaster Victims: Hearings before the Subcommittee on Small Business of the Committee on Banking and Currency, House of Representatives, 89th Congress, 1st session, on H. R. 8060 and S. 1796, to amend the Small Business Act to provide additional assistance for disaster victims, May 12, 1965, 16 pp., printed. Contents include statements and letters of various members of Congress. Bills would authorize extension of the length of SBA loans from 20 to 30 years and a moratorium of up to 5 years on the payment of principal and interest on disaster loans; also increase SBA's revolving fund by $50 million.

Senate Committee on Banking and Currency reported (S. Rept. 177) May 6, 1965, on S. 1796, to amend the Small Business Act to provide additional assistance for disaster victims. Passed Senate May 7, 1965, referred to House for concurrence May 10, 1965; to Committee on Banking and Currency. That Committee reported (H. Rept. 354) to House S. 1796 May 19, 1965.

Introduced in House H. R. 8150 (Culver) May 13, 1965; H. R. 8151 (Curtis) May 13; H. R. 8287 (Hansen of Iowa) May 19; to Committee on Banking and Currency; similar to S. 1796.

House June 7, 1965, passed over without prejudice S. 1796.

STATE DEPARTMENT APPROPRIATIONS FY 1966: Departments of State, Justice, Commerce, the Judiciary, and related agencies appropriations for 1966: Hearings before a subcommittee of the Committee on Appropriations, House of Representatives, 89th Congress, 1st session, Department of State, 1088 pp., printed. Included under the State Department are funds for the various International Fisheries Commissions. Request of $2.3 million for the Commissions in fiscal year 1966 is $275,000 over the amount appropriated for fiscal year 1965. Fiscal year 1966 request for funds (increase over 1965 in parentheses): International Pacific Halibut Commission $251,750 ($64,650); International Pacific Salmon Fisheries Commission $418,400 ($48,900); Inter-American Tropical Tuna Commission $476,450 ($84,350); International Commission for the Northwest Atlantic Fisheries $7,500 ($1,500); International North Pacific Fisheries Commission $24,800 (0); International Whaling Commission $1,000 ($100); Great Lakes Fishery Commission $1,106,100 ($75,400); North Pacific Fur Seal Commission $2,000 ($100); Expenses for U. S. Commissioners $12,000 (0). Testimony discusses program and results of each Commission.

H. R. 8639 (Rooney of N. Y.) introduced in House May 27, 1965, bill making appropriations for the Departments of State, Justice, and Commerce, the Judiciary, and related agencies for the fiscal year ending June 30, 1966, and for other purposes. Same day House committee on Appropriations reported (H. Rept. 427) bill to House; referred to Committee of the Whole House on the State of the Union.

House June 1, 1965, passed H. R. 8639, after adopting a corrective amendment. As approved by the House, the bill would appropriate $2,025,000 for the International Fisheries Commissions, the same amount as the FY 1965 appropriation, but $275,000 less than the Department's budget request.

TECHNOLOGICAL LABORATORY LAND IN MARYLAND: S. 1988 (Tydings and 1 other) introduced in Senate May 18, 1965, to provide for the conveyance of certain real property of the United States to the State of Maryland; to the Committee on Interior and Insular Affairs. Property affected includes site of Bureau of Commercial Fisheries Technological Laboratory, College Park, Md.

TERRITORIAL SEA AND CONTIGUOUS ZONE CONVENTION: S. 1954 (Bartlett) introduced in Senate May 12, 1965, to protect coastal fishery and other resources by implementing the Convention on the Territorial Sea and the Contiguous Zone; to Committee on Commerce. Sen. Bartlett in Congressional Record, May 12, 1965 (pp. 9949-9951), inserted a copy of the Geneva Convention on the Territorial Sea and the Contiguous Zone and a list of the 25 nations which have ratified the convention to date. That convention was adopted as one of four conventions at the 1958 Law of the Sea Conference in Geneva. It was ratified by the United States on Apr. 12, 1961, and brought into force on Sept. 10, 1964, by ratification of the Dominican Republic, which represented the 22nd nation to ratify. Since that date, three additional nations have ratified. The Senator pointed out that the bill would implement the Convention by requesting the President to direct that all necessary research be accomplished to indicate on a large-scale official map the baseline for measuring the breadth of the territorial sea as is specifically required by article 3 of the convention, including the employment of straight baselines where appropriate under article 4 of the convention. The Territorial Sea Convention does not mention contiguous zones for fishery regulation, although many nations, including many which have ratified the convention, have established contiguous zones not to exceed 12 miles for purposes of fishery regulation. At the 1958 Geneva Conference on the Law of the Sea, the decision was made to treat fisheries under a separate convention, which to date has not been ratified by the necessary 22 nations. The bill also would express the sense of Congress that in the preparation of the map the United States should adhere to the convention method of employing straight baselines where the coastline is such that it will permit.

VESSEL "ELVA L.": S. 1275 (Muskie of Maine and 1 other) introduced in Senate Feb. 24, 1965; to Committee on Commerce. That Committee reported (S. Rept. 189) bill favorably May 14.

S. Rept. 189, Documentation of the Vessel "Elva L.," With Full Coastwise Privileges (May 14, 1965, report from the Committee on Commerce, U. S. Senate, 89th Congress, 1st session, to accompany S. 1275), 5 pp., printed. Committee reported bill favorably without amendments. Discusses purpose and reason for the bill, agency comments, and changes in existing law.

S. 1275, authorizing the vessel Elva L. to be documented as a vessel of the U. S. with coastwise privileges, was passed by the Senate without amendment May 17, 1965. The Elva L. is a fishing vessel constructed in Canada in 1948. The owner, a lobsterman and lobster dealer, uses the 43-foot vessel (under 10 net tons) to transport lobsters and bait owned by him between Rockland and Matinicus, Maine. The vessel was purchased with the belief and understanding that this limited use of a foreign-built vessel was not prohibited by law. The Bureau of Customs has advised the owner otherwise. (Foreign-built vessels by law are ineligible to be documented for domestic coastwise trade or fishing.) Thus the bill permits the vessel, although foreign-built, to operate in the domestic trade.

House May 18, 1965, received for concurrence the Senate-passed S. 1275; to Committee on Merchant Marine and Fisheries.

VESSEL MEASUREMENT: Senate, June 1, 1965, received a letter from the Secretary of the Treasury, transmitting a draft of proposed legislation to simplify the admeasurement of small vessels (with accompanying papers); to Committee on Commerce.

WATER POLLUTION CONTROL ACT: Special Subcommittee of Senate Committee on Public Works, May 19, 1965, began hearings to receive testimony for the evaluation of progress made under the Federal Water Pollution Control Act. Hearings continued May 20.

WATER POLLUTION IN U. S. NAVIGABLE WATERS: Introduced in House H. R. 8421 (Dingell) May 25, 1965; H. R. 8744 (McCarthy) June 3; H. R. 8801 (Ashley) June 7; to expand and improve existing law and to provide for the establishment of regulations for the purpose of controlling pollution from vessels and certain other sources in the Great Lakes and other navigable waters of the United States; to Committee on Merchant Marine and Fisheries.

WATER PROJECT RECREATION ACT: By a voice vote the House May 18, 1965, passed H. R. 5269, the Federal Water Project Recreation Act, after adopting a committee substitute amendment that supplied new text. This passage was subsequently vacated and S. 1229, a similar bill, was passed in lieu after being amended to contain the House-passed language.

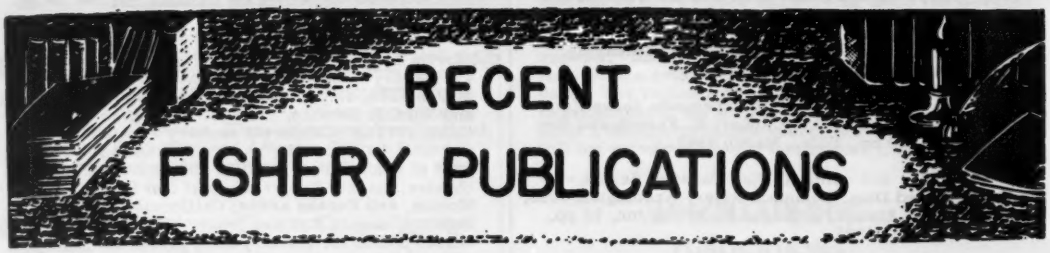
Rep. Grabowski in Congressional Record, May 19, 1965 (pp. 10567-10568), spoke in House in favor of H. R. 5269. He stated that this legislation will bring much needed consistency to the handling of recreation and fish and wildlife as part of Federal multiple purpose water resource projects.

Senate May 20, 1965, disagreed to House amendment to S. 1229, asked for conference with House and appointed conferees.

House May 27, 1965, insisted on its amendment to S. 1229; agreed to a conference requested by the Senate, and appointed conferees.

WATER RESOURCES RESEARCH: House May 25, 1965, received a communication from the President of the United States, transmitting a report of the Federal water resources research program for fiscal year 1966 to Committee on Interior and Insular Affairs.

Note: REPORT ON FISHERY ACTIONS IN 88TH CONGRESS: The U. S. Bureau of Commercial Fisheries has issued a leaflet on the status of all legislation of interest to commercial fisheries at the end of the 88th Congress. For copies of MNL-3--"Legislative Actions Affecting Commercial Fisheries, 88th Congress, 1st Session 1963 and 2nd Session 1964," write to the Fishery Market News Service, U. S. Bureau of Commercial Fisheries, 1815 N. Fort Myer Drive, Room 510, Arlington, Va. 22209. Requests for this leaflet will be filled on a first-come first-served basis until the supply is exhausted.



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C. 20402. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - STATISTICAL LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number — Title

CFS-3743 - Shrimp Landings, November 1964, 5 pp.
CFS-3744 - Gulf Coast Shrimp Data, November 1964 (Revised), 21 pp.
CFS-3750 - Gulf Coast Shrimp Data, December 1964, 19 pp.
CFS-3752 - Rhode Island Landings, November 1964, 3 pp.
CFS-3755 - Florida Landings, January 1965, 8 pp.
CFS-3758 - Virginia Landings, December 1964, 4 pp.
CFS-3760 - Frozen Fishery Products, February 1965, 8 pp.
CFS-3761 - Massachusetts Landings, August 1964, 9 pp.
CFS-3764 - Massachusetts Landings, September 1964, 9 pp.
CFS-3765 - Massachusetts Landings, October 1964, 9 pp.
CFS-3766 - Michigan, Ohio & Wisconsin Landings, December 1964, 4 pp.
CFS-3768 - New York Landings, January 1965, 4 pp.
CFS-3769 - Maryland Landings, January 1965, 3 pp.
CFS-3770 - New Jersey Landings, January 1965, 3 pp.
CFS-3774 - California Landings, January 1965, 4 pp.
CFS-3775 - Massachusetts Landings, November 1964, 9 pp.
CFS-3777 - Canned Fishery Products, 1964 Annual Summary, 17 pp.
CFS-3778 - Industrial Fishery Products, 1964 Annual Summary, 9 pp.
CFS-3779 - Louisiana Landings, January 1965, 3 pp.
CFS-3781 - Texas Landings, November 1964, 2 pp.
CFS-3782 - Texas Landings, December 1964, 2 pp.
CFS-3783 - North Carolina Landings, February 1965, 4 pp.
CFS-3787 - Maine Landings, January 1965, 4 pp.
CFS-3792 - Florida Landings, February 1965, 8 pp.

CFS-3800 - Fisheries of the United States, 1964 (A Preliminary Review), by Charles H. Lyles, 88 pp., illus., April 1965. This report, containing several features not included in the 1963 version, presents detailed information on the United States catch of fish and shellfish, production of manufactured fishery commodities, foreign trade in aquatic products, and supplies of selected fishery items (domestic production plus imports). Data in the report show that the catch in 1964 amounted to 4,523 million pounds worth $390 million ex-vessel. Although this was the smallest catch since 1953, it was the second most valuable on record. Of the total, 2,461 million pounds were used for human food, while the remainder was used for the manufacture of industrial products and for bait and animal food. In 1964, for the second consecutive year, over half the U. S. supply of fish was of foreign origin--about 7,509 pounds. Shrimp again was the most valuable item landed by American fishermen ($70 million), with Pacific salmon running second. Salmon, king crab, oyster, and blue crab production were all higher than in 1963. Production of canned fishery products, also higher than in the previous year, amounted to 1.1 billion pounds worth $431 million to the packers. Record production of both fish portions and canned tuna was set. Output of fish meal, scrap, oil, and solubles, and agar-agar, buttons from mollusk shells, and other industrial products was worth $69.6 million (an increase of $1 million over the value in 1963). New tables include those on additions to the U. S. fleet, supply of scallop meats, supply of canned shrimp, and military purchases. For the first time, landings of tuna in American Samoa are included in the tables on supply of that species.

Wholesale Dealers in Fishery Products (Revised):
SL-26 - Illinois (Great Lakes Area), 1963, 2 pp.
SL-28 - Michigan (Great Lakes Area), 1963, 3 pp.
SL-29 - Ohio (Great Lakes Area), 1963, 2 pp.
SL-30 - Pennsylvania (Great Lakes Area), 1963, 1 p.
SL-31 - New York (Great Lakes Area), 1963, 1 p.
SL-34 - Wisconsin (Mississippi River and Tributaries), 2 pp.
SL-35 - Illinois (Mississippi River and Tributaries), 2 pp.
SL-39 - Tennessee (Mississippi River and Tributaries), 2 pp.
SL-41 - Arkansas (Mississippi River and Tributaries), 2 pp.
SL-47 - Louisiana (Mississippi River and Tributaries), 1 p.
SL-48 - Indiana (Mississippi River and Tributaries), 1 p.
SL-162 - Firms Producing Fish Sticks and Fish Portions (Revised), 1964, 3 pp.

Sep. No. 736 - The U. S. Cod Fishery in the Northwest Atlantic.

Sep. No. 737 - Some Observations of the Distribution of Penaeid Shrimp in Eastern Venezuela.

FL-41 - List of State Fish Hatcheries and Rearing Stations, 29 pp., revised March 1964.

SSR-Fish. No. 493 - Salmon Escapements above Rock Island Dam, 1954-60, by Robert R. French and Roy J. Wahle, 20 pp., illus., March 1965.

SSR-Fish. No. 500 - Annual Fish Passage Report - Rock Island Dam, Columbia River, Washington, 1963, by Paul D. Zimmer and John H. Broughton, 26 pp., illus., March 1965.

SSR-Fish. No. 501 - The Fishery for Blue Crabs in the St. Johns River, Florida, With Special Reference to Fluctuation in Yield Between 1961 and 1962, by Marlin E. Tagatz, 14 pp., illus., Feb. 1965.

Electrofishing Boat with Variable Voltage Pulsator for Lake and Reservoir Studies, by F. Phillip Sharpe, Circular 195, 10 pp., illus., printed, Sept. 1964.

Field Identification of the Northeastern Pacific Rockfish (SEBASTODES), by Charles R. Hitz, Circular 203, 61 pp., illus., March 1965.

The Pacific Northwest Region of the Bureau of Commercial Fisheries, Circular 207, 27 pp., illus., April 1965. Contains information on research and service programs and their recent accomplishments in the Region. Presents short sketches on the work of the biological and technological laboratories; Columbia Fisheries Program Office; and fish-passage, and exploratory fishing and gear research. Also includes accounts of the functions of the marketing, market news and statistics, enforcement, and loans and grants offices. Photos enhance the attractiveness of this circular.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE ICHTHYOLOGICAL LABORATORY, BUREAU OF COMMERCIAL FISHERIES, U. S. NATIONAL MUSEUM, WASHINGTON, D. C. 20560.

Bathypelagic Fishes of the Antarctic. I--Family Myctophidae, by A. P. Andriashev, Translation No. 29, 100 pp., processed. (Translated from the Russian, Explorations of the Fauna of the Seas, I, 1962, pp. 216-294.)

Development of the Flying Fish CHEILOPOGON (PTENICHTHYS) UNICOLOR (Cuv. et Val.) (Pisces, Exocoetidae), by N. N. Gorbunova and N. V. Parin, Translation No. 32, 8 pp., processed. (Translated from the Russian, Trudy Instituta Okeanologii, vol. 62, 1963, pp. 62-67.)

The Species Composition of the Blenniidae of the Black Sea, by A. N. Svetovidov, Translation No. 31, 16 pp., processed. (Translated from the Russian, Zoologicheski Zhurnal, Akademiia Nauk SSSR, vol. 37, no. 4, 1958, pp. 584-593.)

On the Species Composition and Distribution of Sculpins of the Genus TRIGLOPS Reinh. in the Northern Seas, by A. P. Andriashev, Translation No. 30, 21 pp., processed. (Translated from the Russian, Akademiia Nauk Trudy Vsesoyuznogo Gidrobiologicheskogo Obshchestra, vol. 1, 1949, pp. 194-209.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, March 1965, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; prices for fish meal, oil, and solubles; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, March 1965, 12 pp., illus. (U. S. Bureau of Commercial Fisheries, Tuna Resources Laboratory, P. O. Box 271, La Jolla, Calif. 92038.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, March 1965, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; Gulf menhaden landings and production of meal, solubles, and oil; fishery imports at Mobile, Ala., Morgan City and New Orleans, La., Miami, Fla., and Houston, Port Isabel, and Brownsville, Tex.; and sponge sales; for the month indicated.

List of Chicago Brokers and Importers of Fishery Products and Byproducts, 1965, 6 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 704, 610 S. Canal St., Chicago, Ill. 60607.)

List of Primary Receivers of Imported Fishery Products and Byproducts at New York, 1964, 26 pp., processed, January 4, 1965. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.)

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, March 1965, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va. 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, February 1965, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial-fish landings and ex-

vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, and Provincetown), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--January and February 1965, 15 and 17 pp. respectively. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the months indicated.

Receipts and Prices of Fresh and Frozen Fishery Products at Chicago, 1964, by C. E. Cope, 66 pp., illus., April 1965. (Fishery Market News Service, Rm. 704, 610 S. Canal St., Chicago, Ill. 60607.) Summarizes fishery products receipts and prices at Chicago during 1964. Notable events were the initiation of import data publication for the Chicago and Detroit Ports of Entry, the formation of The Midwest Federated Fisheries Council, and the opening of 2 Great Lakes fish meal plants. Statistical tables include data on receipts of fish and shellfish at Chicago wholesale market by species, states, and provinces, and by months; wholesale market price ranges by months for fresh-water fish, frozen fillets, and other frozen fish and shellfish; and imports reported by Bureau of Customs at Chicago and Detroit, by species and country, May-Oct. 1964. A stylized drawing with a fish theme, by a professional artist, on the front cover helps make this a handsome and well planned report.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, March 1965, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402.

Fish Recipes from the Great Lakes, Circular 201, 16 pp., illus., printed, 1965, 25 cents. Presents new methods of achieving culinary magic in preparing and cooking fish from the Great Lakes. Bureau of Commercial Fisheries home economists have developed 24 new recipes and serving ideas for lake and river fish such as yellow perch, catfish, whitefish, pickerel, smelt, buffalofish, and other Great Lakes species. Illustrations are in color. The Great Lakes have been a source of food since America's earliest days. The region's fishery industry reached peak development at the turn of the 20th century and, despite a decline in recent years, provides nearly 100 million pounds of choice fish annually.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALASKA:

A Technical Study of Investment Opportunities in Southeastern Alaska with an Evaluation of the Economic Impact of the "Marine Highway" System, 250 pp., illus., processed, Jan. 1965, $1.25. Area Redevelopment Administration, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Includes, among other specific short and medium range industrial and commercial opportunities in Southeastern Alaska, a prospectus on a plant for processing for export canned, frozen, and packaged fishery products, employing 20 to 25 skilled, semi-skilled, and unskilled workers.

AMINO ACIDS:

"The amino acid sequence in fin-whale insulin," by Hiroko Hama and others, article, Journal of Biochemistry, vol. 56, Sept. 1964, pp. 285-293, printed. The Japanese Biochemical Society, c/o Department of Biochemistry, Faculty of Medicine, Tokyo University, Bunkyo-ku, Tokyo, Japan.

"Structure of sperm whale myoglobin. I--Amino acid composition and terminal groups of the chromatographically purified protein," by A. B. Edmundson, article, Chemical Abstracts, vol. 58, June 24, 1963, Abstract No. 14346c, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

ANTIBIOTICS:

Antibiotics and the Preservation of Wet Fish, Torry Advisory Note No. 19, 8 pp., printed, Sept. 1964. Torry Research Station, Department of Scientific and Industrial Research, 135 Abbey Rd., Aberdeen, Scotland.

AUSTRALIA:

Annual Report for 1963/64, 187 pp., printed, 1964. Commonwealth Scientific and Industrial Research Organization, 314 Albert St., East Melbourne C2, Victoria, Australia.

BASS:

A Bibliography of the Striped Bass or Rockfish, ROCCUS SAXATILIS (Walbaum), by Hensley C. Woodbridge and Hunter M. Hancock, 23 pp., printed, 1964, $1. Sport Fishing Institute, Bond Bldg., Washington, D. C.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

BOTULISM:

"Botulinum toxin, type A: effects on central nervous system," by E. H. Polley and others, article, Science, vol. 147, no. 3661, Feb. 26, 1965, pp. 1036-1037, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

BUTTERFISH:

"Study on the larvae of fishes in the northeastern sea area along the Pacific Coast of Japan. III--Takabe (butter-fish), Labracoglossa argentiventris Peters," by Shigeru Odate, article, Bulletin of the Tohoku Regional Fisheries Research Laboratory, vol. 21, 1962, pp. 63-70, illus., printed in Japanese with English summary. Tohoku Regional Fisheries Research Laboratory, Shiogama, Miyagi, Japan.

CALIFORNIA:

California Fish and Game, vol. 51, No. 2, April 1965, 64 pp., illus., printed, single copy 75 cents. Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807. Includes, among others, articles on: "Survey on the marine environment offshore of San Elijo Lagoon, San Diego County," by Charles H. Turner, Earl E. Ebert, and Robert R. Given; and "Developmental temperature tolerance and rates of four Southern California fishes, Fundulus parvipinnis, Atherinops affinis, Leuresthes tenuis, and Hypsoblennius sp.," by Clark Hubbs.

CANADA:

Annual Report for the Fiscal Year Ended March 31, 1964, 108 pp., printed, 1964. Department of Lands and Forests, Edmonton, Alberta, Canada. Contains a chapter on fish and wildlife.

Annual Report 1963/64, 106 pp., printed, 1964. Department of Mines and Natural Resources, Winnipeg, Manitoba, Canada. Contains report on fisheries.

Annual Report 1963/64, 34 pp., printed, 1964. Department of Trade and Industry, Halifax, N. S., Canada. Contains chapter on fisheries.

Annual Report for 1963/64, 179 pp., printed, 1964. Department of Natural Resources, Regina, Saskatchewan, Canada. Contains report on the Fisheries Branch.

Annual Report, 1964, 23 pp., printed, 1964. Prince Rupert Fishermen's Co-operative Association, Prince Rupert, B. C., Canada.

Fisheries Council of Canada, Annual Review 1965, 92 pp., illus., printed. Fisheries Council of Canada, Rm. 703, 77 Metcalfe St., Ottawa 4, Canada. Includes, among others, articles on: "North American Fisheries Conference"; "Fisheries of South Africa," by H. V. Dempsey; "Icelandic fishing fleet," by M. Elisson; "F. A. O. and U. N. S. F.," by F. E. Popper; "Atlantic sealing industry," by D. E. Sergeant; "Canada's commercial fisheries," by F. W. Wallace; "Fisheries technology in B. C.," by R. L. Payne; and "Commercial fisheries--1964," by J. N. Lewis.

Fisheries Statistics of British Columbia, 1964 (Preliminary), 13 pp., processed, April 1965. Canadian Department of Fisheries, 1155 Robson St., Vancouver 5, B. C., Canada.

Fishes of Northern Ontario, North of the Albany River, by R. A. Ryder, W. B. Scott, and E. J. Crossman, Contribution No. 60, 30 pp., illus., printed, 1964, C$0.75. Royal Ontario Museum, University of Toronto, Toronto, Canada.

Pecheries Commerciales, 1963 (Commercial Fisheries, 1963), 64 pp., illus., printed in French and English. Quebec Bureau of Statistics, Department of Industry and Commerce, Quebec, Canada.

Review of the Fisheries, 1964, 9 pp., printed, 1965. Department of Fisheries, St. John's, Newfoundland, Canada.

Survey of Great Slave Lake Domestic Fishery in 1959 and 1962. 1--1962 Census and Fish Supply in North Arm, by J. J. Keleher, Manuscript Report Series (Biological) No. 800, 71 pp., printed, 1964. Biological Station, Fisheries Research Board of Canada, London, Ontario, Canada.

CARP:

Zeitschrift fur Fischerei und Deren Hilfswissenschaften, vol. 12, nos. 8, 9, 10, Dec. 1964, 240 pp., illus., printed in German with English abstracts. Neumann Verlag, Dr. Schmincke Allee 19, Radebeul 1, German Democratic Republic. Some of the articles are: "Die schadwirkung von kupfersulfat, zinksulfat, kaliumzyanid, ammoniak und phenol gegenuber karpfen (Cyprinus carpio) vom wasser her und nach peroraler applikation" (The toxic effects of cuprous sulphate, zinc sulphate, potassium cyanide, ammonia, and phenol on carp when absorbed from water and when administered by mouth), by Dietwart Nehring; and "Vergleichende anatomisch-physiologische untersuchungen an wild- und teichkarpfen (Cyprinus carpio L.)" (Comparative studies of anatomical-physiological differences in wild and pond carp), by Werner Steffens.

CEYLON:

Draft 10-Year Plan for the Development of the Fishing Industry, 117 pp., printed, 1965. Ceylon Fisheries Corporation, Galle Face, Colombo 3, Ceylon. Since its establishment on Oct. 1, 1964, the Board of Directors of the Ceylon Fisheries Corp. has drawn up a long-term plan for the development of the country's fisheries. Government policy was expressed in a speech by the Governor General of Ceylon on April 9 of this year: "A programme will be implemented (which) will include the building up of a scheme for deep sea fisheries on a modern scale with groups of related fisheries activities so that the country will be in a position to supply all its local requirements of fish and fish products. These measures will ameliorate the conditions of those engaged in the fishing industry, and it is the intention of My Government to provide housing and other facilities for them." This report contains plans for: the production of fishery products--vessels, harbors, and increased landings; domestic consumption and export of fish and shellfish; investment (Government, corporation, and private) in the industry; better incomes and employment of fishermen; and financing of the development projects

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by use of Government revenue and a minimum reliance on credit. Included are many statistical tables showing projected data for 1965-1975.

CHESAPEAKE BAY:
Chesapeake Science, vol. 6, no. 1, March 1965, 72 pp., illus., printed, single copy 75 cents. Chesapeake Biological Laboratory, Natural Resources Institute, University of Maryland, Solomons, Md. Some of the articles are: "Relationships between Bucephalus sp. and Crassostrea virginica: histopathology and sites of infection," by Thomas C. Cheng and Richard W. Burton; "Seasonal setting patterns of five species of bivalves in the Tred Avon River, Maryland," by William N. Shaw; "Supplemental feeding of oysters with starch," by Dexter S. Haven; and "Infection experiment in nature with Dermocystidium marinum in Chesapeake Bay," by J. D. Andrews.

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Handling and Chilling of Fresh Fish on Board, by Eizaburo Noguchi, Fishery Research Series 7, 35 pp., printed in Japanese, Feb. 1965. Japan Fisheries Resource Conservation Association, 6th Fl., Zenkoku Choson Kaikan Bldg., 1-17, Nagata-cho, Chiyoda-ku, Tokyo, Japan.

COELACANTH:
"Coelacanth displayed for first time in U. S.," article, Science Newsletter, vol. 87, no. 13, March 27, 1965, p. 199, illus., printed, single copy 15 cents. Science Service, 1719 N St. NW., Washington, D. C. 20036.

CONSUMER PREFERENCE:
"Why consumers purchase frozen fillets, sticks, portions," article, Quick Frozen Foods, vol. 27, Oct. 1964, pp. 80-83, printed. E. W. Williams Publications, Inc., 82 Wall St., New York, N. Y. 10005.

CONVERSION FACTORS:
Measures, Stowage Rates and Yields of Fishery Products, by J. J. Waterman, Torry Advisory Note No. 17, 12 pp., illus., printed, Aug. 1964. Torry Research Station, Department of Scientific and Industrial Research, 135 Abbey Rd., Aberdeen, Scotland.

CRAB MEAT:
"The browning of canned crab meat. III--The browning of canned crab as dependent upon the time of leaving the raw crab without carapace but uncanned," by Yoshio Hagasawa, article, Chemical Abstracts, vol. 58, April 29, 1963, Abstract No. 9558c, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

CUBA:
Translations on Cuba, No. 221 (Cuban Fisheries), JPRS 28082, 77 pp., illus., printed, Dec. 31, 1964, $3. (Translated from the Spanish, Las Pesquerias Cubanas, no. 20, Feb. 1964.) Clearinghouse, U. S. Department of Commerce, Springfield, Va. 22151.

DENMARK:
Beretning for 1964 (Annual Report to the Danish Fishing Industry with an English Translation of the Main Experimental Results), 40 pp., illus., printed in Danish with English summary, Feb. 1965. Fiskeriministeriets Forsøgslaboratorium, Copenhagen, Denmark. Studies include research on fresh fish--rigor mortis of trout, electric freshness tester, iced herring, and vacuum-packed chilled fish; frozen fish--thawing of block-frozen fish, filleting of thawed raw fish, and peeling of frozen whole shrimp; semipreserved canned fish--spiced herring; sterile canned fish--effect of can lacquers on corrosion, mackerel in tomato sauce, addition of citric acid to canned shrimp; fish meal and oil--removal of odor and flavor from fish meal, composition of fat in fish meal, and fish oil in sow fodder; and separation of fish silage fractions.

DOLPHIN:
Experience in Commercial Fishing for Dolphin, USSR, by A. I. Petrenko, TT 64-51963, 14 pp., illus., printed, Dec. 17, 1964, $1. (Translated from the Russian, Rybnoe Khoziaistvo, no. 3, 1962.) Clearinghouse, U. S. Department of Commerce, Springfield, Va. 22151.

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84, illus., printed in Swedish. Fiskeriforeningen i Finland, Fabiansgatan 5 A 7, Helsinki, Finland.

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Boy's Book of Fishes, by Edward C. Migdalski, 172 pp., illus., printed, 1964, $5. Ronald Press, 15 E. 26 St., New York, N. Y. 10010. Discusses natural history and biology of common fish species in bodies of waters in and around the United States. For grades 6 to 8.

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Biological Problems in Acoustic Systems (Behaviour of Fishes with Special Reference to their Sensory Capacities), Final Report to Office of Naval Research, 12 pp., printed, 1964. University of Maryland, College Park, Md.

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Council, Food and Agriculture Organization of the United Nations, Forty-Fourth Session, Rome, 21 June 1965--Committee on Fisheries, CL 44/11, 14 pp., processed, Feb. 25, 1965. Council of the Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. This paper presents proposals for the establishment of a permanent Committee on Fisheries for consideration by the Council of the FAO at its meeting on June 21, 1965. It discusses functions of the Committee, FAO Constitutional bases for the Committee, and recommendations for alternate procedures to be followed in its establishment by the Conference. Included are a list of relevant documents, a new Rule dealing with the Committee on Fisheries, and an international convention on cooperation in fisheries; the last two for possible adoption by the FAO.

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"Influence of freezing rate on fish quality," by D. G. Rutov, article, Kholodil'naia Tekhnika, no. 1, 1965, p. 67, printed in Russian, single copy 60 kop. (about 70 U. S. cents). Four Continent Book Corp., 822 Broadway, New York, N. Y. 10003.

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Handbook on Fishery Gear, Net Material, and Fishing Equipment, by N. N. Andreev, 504 pp., printed in Russian, 1962. Pishchepromizdat, Moscow, U.S.S.R.

GENERAL:

The Bountiful Sea, by Seabrook Hull, 352 pp., illus., printed, 1964, $6.95. Prentice-Hall, Inc., Englewood Cliffs, N. J. 07632. The sea through the centuries has always been a mysterious world, but as man turns more and more to the sea many of its mysteries are being solved with knowledge. The author in his introduction very ably points out that the book" . . . is a history of man and the sea since before the days of Aristotle. It is a primer on oceanography, demonstrating the vastness and complexity of this realm and its control over the world of land and air in which we live. If it has one fundamental purpose it is to present an overall picture of the total effort and the inextricable interrelationship of science and technology with all of the many things we would do in the sea. In turn, it seeks to relate these things to people--individuals who, in the final analysis, must accept or reject the challenge." In the first three chapters (the "Earth's Last Great Frontier," "From the Beginning, The Sea," and "Out of the Darkness, Into the Depths") the author discusses man's relationship to the sea and his quest for knowledge about the mysterious world of the sea throughout history. The balance of the book deals with the future of the sea; its riches; living, working, and playing beneath the sea; what we can learn from the creatures of the sea; and what is needed to garner the bounty of the sea. The various chapters delve into the pulses of the sea, the living sea and its challenge, the war of sound and darkness, mobilization of forces to exploit its riches, the profit and adventure to be found in the sea, and what the bountiful sea can provide. The last chapter deals with "Men of Conquest." In discussing the mobilization of forces, the author describes the sea as "a cornucopia of raw materials for man's industries, food for his stomach, health for his body, challenges to his mind, and inspiration to his soul." In essence the author points out that the food that will be needed to feed the exploding world population is to be found in the sea. Looking into the crystal ball, he foretells the day when nets and hooks in harvesting the sea will give way to bubble screens and electrical fields to lure or herd just the desirable size and species of fish into great suction hoses or right up through an underwater hatch into the holds of fishing vessels. But he does warn that man must practice conservation if he is to preserve the bounty of the sea for future generations. The sea as a new source of fresh water and the world's greatest known reserve of raw materials (such as diamonds, gold, coal, iron ore, tin, sulphur, oil etc.) is vividly explained. Illustrated with some excellent black and white photographs, the book also contains references and suggestions for further reading and a good index. Most of the book is written in such a way that it is easy reading. Businessman, scientist, scholar, researcher, sport or commercial fisherman, and anyone who has any interest at all in the sea will find the book fascinating reading and a treasure house of facts about the sea.

--J. Pileggi

The First Book of Fishes, by Jeanne Bendick, 72 pp., illus., printed, $2.65, 1965. Watts, Franklin, Inc. 699 Madison Ave., New York, N. Y. 10021. Tells children about a variety of fish.

GERMAN FEDERAL REPUBLIC:

Market Factors in the Federal Republic of Germany, by Melissa F. Wells and Margot W. Zener, OBR 65-16, 8 pp., printed, March 1965, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

HALIBUT:

Pacific Halibut Fishery Regulations (Effective March 23, 1965), 13 pp., illus., printed. International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle, Wash. 98105.

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"Evaluation of herbicides for control of aquatic weeds," by R. D. Blackburn and L. W. Weldon, article, Annual Report of the Florida Agricultural Experiment Stations, pp. 257-267, printed, 1962. Agricultural Experiment Station, University of Florida, Gainesville, Fla.

HERRING:

"A contribution to the classification of Clupeoid fishes," by P. J. P. Whitehead, article, Annals and Magazine of Natural History, vol. 5, no. 60, 1962, pp. 737-750, printed. Taylor and Francis Ltd., Red Lion Court, Fleet St., London EC4, England.

Distribution of Herring of the Atlanto-Scandian Stock, by J. G. Friedland, I. I. Osetinskaia, and T. A. Bernikova, Translations (New Series) No. 53, 8 pp., illus., processed, 1964. (Translated from the Russian, Soviet Fisheries Investigations in Northern European Seas, Moscow, 1960, pp. 379-389.) Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, Suffolk, England.

"Silakkatutkimukset II" (Herring study II), by Veikko Sjöblom, article, Suomen Kalastuslehti, no. 10, 1964, pp. 257-268, illus., printed in Finnish. Suomen Kalastusyhdistyksen, Fabianinkatu 5 A 7, Helsinki, Finland.

"Strömmingsundersökningarna" (Investigations of the Baltic herring), by Veikko Sjöblom, article, Fiskeritidskrift for Finland, vol. 8, no. 5-6, 1964, pp. 113-129, illus., printed in Swedish. Fiskeriforeningen i Finland, Fabiansgatan 5 A 7, Helsinki, Finland.

ICHTHYOLOGY:

An Examination of Certain Aspects of the Methodology and Theory of Fisheries Biology, by G. L. Kesteven,

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vol. 137-B, 21 pp., printed, 1964. Council for Scientific and Industrial Research, Division of Fisheries, Cronulla, N. S. W., Australia.

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INTERNATIONAL AGREEMENTS:

Fisheries, King Crab, Agreement between United States and Japan, Effected by Exchange of Notes Signed Washington Nov. 25, 1964 (Entered into Force Nov. 25, 1964), Treaties and Other International Acts Series, No. 5688, 7 pp., printed, 1964, 5 cents. Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

ITALY:

Annuario Statistico della Pesca e della Caccia, 1963 (Statistics Annual for Fishing and Hunting, 1963), vol. 11, 1963, 169 pp., illus., printed in Italian, 1964. Istituto Centrale di Statistica, Repubblica Italiana, Rome, Italy. Contains 1962 data with comparisons on fishery landings; and receipts, sales, and average prices of fishery products at principal markets. Also contains hunting data.

Bolletino di Pesca, Piscicoltura e Idrobiologia, vol. 18, no. 2, July-Dec. 1963, 149 pp., illus., printed in Italian with French and English summaries, single copy L. 1,200 (about US$1.90). Laboratorio Centrale di Idrobiologia, Piazza Borghese, 91, Rome, Italy. Among the articles are: "Studi sulla biologia e pesca di Xiphyas gladius (Nota II)" (Studies on the biology and fishery of Xiphyas gladius--swordfish), by Cavaliere Antonino; and "L'ostricoltura nello Stagno di Thau" (Oyster culture in Thau Pond), by Matta Francesco.

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Hokusuishi Geppo (Monthly Report of the Hokkaido Fisheries Research Laboratory), vol. 22, no. 2, Feb. 1965, 58 pp., illus., printed in Japanese, single copy 100 yen (about 28 U. S. cents). Hokkaido Central Fisheries Research Laboratory, 238-banchi, Hamanaka-cho. Yoichi, Hokkaido, Japan. Includes articles on "Life of the dab of Ishikari Bay and the resource," by Y. Kaga and K. Sugama; "Fishes in the nearby seas of Hokkaido--the flatfishes," by T. Ueno; "Improving the bleaching process of frozen ground fish--on the possibility of economizing on water," by T. Fukumi and others; "Mold stains on fishery products and their prevention," by T. Sato and Y. Okuda.

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Long-Range View of Coastal Fishery Production and Regional Characteristics, Research Data 63-8, 53 pp., printed in Japanese, May 1964. Research and Legislative Reference Bureau, National Diet Library, Tokyo, Japan.

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Available from the Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Tokyo, Japan. Printed in Japanese with English abstracts.

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fishing effort and the diminution of average body length due to the exploitation of a virgin stock," by Tasae Kawakami and Takeru Kitahara; "On the oil of fish meal. I--Oxidation of oil in manufacturing of brown fish meal and the effect of antioxidant application thereon," by Kenzo Toyama and others; "On a new amino acid, S-hydroxymethyl-L-Homocysteine isolated from Chondrus ocellatus," by Mitsuzo Takagi and Ayako Okumura; "Studies on the retention of meat color of frozen tuna. I--Absorption spectra of the aqueous extract of frozen tuna meat undergoing discoloration," by Masamichi Bito; and "Mechanics of towed nets," by Tasae Kawakami.

_____, vol. 30, no. 11, Nov. 1964, 81 pp., illus. Includes, among others, these articles: "On the relationship between activity of Japanese spiny lobster and under water light intensity," by Itsuo Kubo and Naonori Ishiwata; "Studies on the bait in trolling. II--On the death of live bait and missing from hook in tuna long-line fishery," by Syozyuro Okabayasi; "Free amino acids in the muscle of a few species of fish," by Shoji Konosu, Muzaffer Ozay, and Yoshiro Hashimoto; and "Vitamins in 'katsuwobushi' (dried skipjack)," by Masaaki Yanase, Yasuyuki Shimizu, and Hideo Higashi.

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"Fluctuations in the abundance of saury on the northeastern sea area in Japan. I," by Hideyuki Hotta, pp. 1-20, illus.

"On the relation between the pattern of the Kuroshio Current in spring and summer and the saury fishing conditions in fall," by Shin-Ichi Fukushima, pp. 21-37, illus.

KENYA:

Preliminary Survey of Bottom Fishing on the North Kenya Banks, by J. F. C. Morgans, Fishery Publications No. 21, 98 pp., illus., processed, 1964, 30s. 8d. ($6 when ordered in the United States). British Colonial Office, London, England. (For sale by British Information Services, 845 Third Ave., New York, N. Y. 10022.) Contains an account of findings made by 3 research vessels on 15 cruises to the North Kenya Banks, 1954-59. Those findings are presented in sections on: charting--topography of the bank system, cartographic techniques, and other topics; weather, sea, and ship's drift; fishing--gear, effort, catch; and biology--breeding, feeding, parasites. Lists are given of the species caught, their average weights, and the sizes at which sexual maturity is reached. The Banks are a unique expansion of the continental shelf off tropical East Africa, according to the author. The most important fish found above the main thermocline were snappers, rock cod, and scavengers (Lethrinidae). There was some evidence that most species exist in loose schools that tend to coalesce as individuals approach sexual ripeness.

KOREA:

"Government financial assistance schemes," by Ro, Jai Dong, article, IPFC Current Affairs Bulletin, no. 39, April 1964, pp. 1-5, printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand. Outlines current Republic of Korea governmental action and plans to finance the fisheries industry by a system of loans, subsidies, and grants. Grants of up to 80 percent of costs may be made to individuals or cooperatives for establishing ice-making, freezing, cold-storage, and consignment-sale facilities; for breakwaters or piers recognized as a public need; and for deep-sea fishing vessels, processing plants, and other facilities. The mutual relief insurance system is also described and results of its operation to date are tabulated.

LOBSTERS:

"Lobsters to test new trap this winter," article, Canadian Fisherman, vol. 51, Jan. 1964, pp. 19, 26, printed. National Business Publications Ltd., Gardenvale, Quebec, Canada.

MACKEREL:

"Study on the larvae of fishes in the northeastern sea area along the Pacific Coast of Japan. II--Carangidae: jack-mackerel, scads and yellow-tails," by Shigeru Odate, article, Bulletin of the Tohoku Regional Fisheries Research Laboratory, vol. 20, 1962, pp. 94-105, illus., printed in Japanese with English summary. Tohoku Regional Fisheries Research Laboratory, Shiogama, Miyagi, Japan.

MALAYSIA:

Malayan Fishing Methods, by T. W. Burdon and M. L. Perry, Monograph on Malay Subjects No. 2, 174 pp., illus., printed, 1954. Malayian Branch, Royal Asiatic Society, Singapore, Malaysia.

MARINE ALGAE:

Reserves of Marine Algae and Their Exploitation, 96 pp., printed, 1964. Vsesoyuznoe Gidrobiologicheskoe Obshchestvo, Akademiia Nauk SSSR, Moscow, U.S.S.R.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

MARINE MAMMALS:

Determination of the Age of Commercial Pinnipeds and the Efficient Use of Marine Mammals, 57 pp., printed in Russian, 1964. Institut Morfologii Zhivotnykh, Akademiia Nauk SSSR, Moscow, U.S.S.R.

Articles from Vsesoyuznoe Soveshchanie po Izucheniyu Morskikh Mlekopitayushchikh, 1963 (Second All-Union Conference for the Study of Marine Mammals, 1963), printed in Russian. Akademiia Nauk SSSR, Moscow, U.S.S.R.:

"O vyrabotke edinoi metodiki izucheniya morskikh mlekopitayushchikh" (Developing a unified method for the study of marine mammals), by S. E. Kleineberg, V. M. Bel'kovich, and A. V. Yablokov, pp. 20-21.

"Zadachi regulirovaniya promysla morskikh mlekopitayushchikh v vokakh SSSR" (The tasks of the regulation of hunting of marine mammals in the waters of the U.S.S.R.), by A. D. Druzhinin, Yu. A. Vavilov, and M. L. Kashintsev, pp. 12-13.

MEXICO:

"Mexico: inaugura el Puerto Pesquero de Alvarado" (Mexico inaugurates the Fishery Port of Alvarado), article, Industrias Pesqueras, vol. 39, no. 907, Feb. 1, 1965, pp. 51-52, illus., printed in Spanish, single copy 40 ptas. (about US$0.70). Industrias Pesqueras, Policarpo Sanz, 21-2°, Vigo, Spain.

Presencia de la Comision Nacional Consultiva de Pesca (Work of the National Consultative Commission on Fisheries), by Fernando Castro y Castro, Documentos C. P. 3, 14 pp., printed in Spanish, Jan. 1964. Correo Privado, Ave. Juarez No. 30-103, Apartado Postal 6-685, Mexico, D. F., Mexico.

Puerto Pesquero Piloto de Alvarado (Pilot Fishery Port of Alvarado), 32 pp., illus., printed in Spanish. Banco Nacional de Fomento Cooperativo, S. A. de C. V., Mexico, D. F. Describes the new pilot fishery port of Alvarado, on Mexico's Gulf Coast. Discusses development of the Mexican fisheries, the decision to construct a fishery port on the Gulf of Mexico and selection of the site, fiscal and technical details of the project, operation of the port and associated processing plants, and its long-range objectives. Color photos show an aerial view of the port, a shot of fishing vessels at dockside, and scenes in the receiving room, freezing and packing sections, fish meal plant, and other sections.

Reports available from Comision Nacional Consultiva de Pesca, Mexico, D. F., Mexico.:

El Mercado de Productos Pesqueros en Mexico (The Market for Fishery Products in Mexico), by Jesus Perez Urunuela, 138 pp., illus., printed in Spanish, 1964.

Programa Integral para el Desarrollo de la Industria Pesquera en Mexico (Integral Program for the Development of the Fisheries Industry in Mexico), No. 1, 34 pp., printed, 1962.

MIDDLE ATLANTIC:

Scientific Fishery Investigations in the Middle Atlantic Region, by A. N. Probatov, E. S. Prosvirov, and O. G. Riabikov, Translations (New Series) No. 52, 10 pp., illus., processed, 1964. (Translated from the Russian, Soviet Fisheries Investigations in North European Seas, Moscow, 1960, pp. 405-412.) Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, Suffolk, England.

MOLLUSKS:

"Experiments in mollusc husbandry," by A. D. Ansell, article, Fishing News International, vol. 3, July-Sept. 1964, pp. 216, 218-219, printed. Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London EC4, England.

Mollusks--Problems of Theoretical and Applied Malacology (Conference for the Study of Mollusks), Collected Articles, 344 pp., printed in Russian, 1963. Zoologicheskii Institut, Akademiia Nauk SSSR, Moscow, U.S.S.R.

MOROCCO:

Establishing a Business in Morocco, OBR 65-17, 12 pp., printed, March 1965, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

MUSSELS:

Aspects of Reproduction, Settling and Growth in the Mussel MYTILUS EDULIS PLANULATUS Lamarck, by B. Wisely, 6 pp., illus., printed, Dec. 1964. (Reprinted from Journal of the Malacological Society of Australia, no. 8, Dec. 15, 1965, pp. 25-30.) The Australian Museum, College St., Sydney, N. S. W., Australia.

NETS:

"Comparative efficiencies between amilan net and cotton net for small beam trawlers and surrounding seines," by C. Miyazaki, article, IPFC Current Affairs Bulletin, no. 41, Dec. 1964, pp. 14-27, illus., printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Maliwan Mansion, Phra Atit Rd., Bangkok, Thailand.

NORTH PACIFIC:

Outline of the Northern Water Fisheries, 95 pp., printed in Japanese, Feb. 1965. Japan Fisheries Society, 17-banchi, 1-chome, Nagata-cho, Chiyoda-ku, Tokyo, Japan.

NORWAY:

"Den Norske hermetikkindustri i 1964" (The Norwegian canning industry in 1964), by Trygve Orre and Olav Omland, article, Tidsskrift for Hermetikindustri (Norwegian Canners Export Journal), vol. 51, no. 2, Feb. 1965, pp. 49-53, printed in Norwegian and English. Reviews production and export of Norwegian canned fishery products in 1964. Covers the landings, canned pack, and prices of kippered herring, brisling, small sild, mackerel, and shellfish. Discusses the export market, which showed an overall increase in both volume and value during 1964. However, exports to the United States declined, while those to the United Kingdom increased because of a reduction in import duties. Because of tightening world competition in canned fishery products, the Norwegian industry had to reduce sales prices and the margin of profit was consequently diminished. Norwegian canners are

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concerned about the outlook for sales to the European Common Market.

NORWAY POUT:

The Stocks of TRISOPTERUS ESMARKII (Nilsson) off North-west Scotland and in the North Sea, by D. F. S. Raitt, Marine Research 1965 No. 1, 24 pp., illus., printed, 7s. 6d. (about US$1.05). Department of Agriculture and Fisheries for Scotland, Edinburgh, Scotland. (For sale by the Sales Section, British Information Services, 845 Third Ave., New York, N. Y. 10022.)

OCEANOGRAPHY:

Catalog of Data in World Data Center A: Oceanography, Suppl. No. 1 (Data received during the period, 1 January to 30 June 1964), printed, 1964. World Data Center A: Oceanography, 1st and N Sts. SE., Washington, D. C.

"Inner space: the oceans," by Barbara Tufty, article, Science News Letter, vol. 87, no. 3, Jan. 16, 1965, pp. 42-43, illus., printed, 15 cents. Science Service, Inc., 1719 N St. NW., Washington, D. C. 20036.

The International Indian Ocean Expedition, by J. V. Leyendekkers, 9 pp., illus., printed. (Reprinted from The Australian Journal of Science, vol. 27, no. 6, Dec. 1964, pp. 153-161.) Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Cronulla, N.S.W., Australia.

"Oceanographic instrumentation heads for major expansion," by Charles W. Covey, article, Under Sea Technology, vol. 6, no. 4, April 1965, pp. 20-21, printed, single copy $1.00. Compass Publications, Inc., 617 Lynn Bldg., 1111 No. 19th St., Arlington, Va. 22209.

Oceanographical Observations in the Indian Ocean in 1962, H.M.A.S. DIAMANTINA (Cruise Dm 2/62), Oceanographical Cruise Report No. 15, 120 pp., illus., processed, 1964. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia.

Progress in Oceanography, vol. 2, edited by Mary Sears, 271 pp., illus., printed, 80s. (about US$11.20). A Pergamon Press book. The Macmillan Company, 60 Fifth Ave., New York, N. Y. 10011. Contains a research report on the distribution of phosphorus and oxygen in the Atlantic Ocean, 1957-58; an article about the distribution of zooplankton in the sea; a historical account of deep-sea expeditions and research vessels, 1873-1960; and a survey of marine bottom samplers.

"Soviet oceanography today," by T. K. Treadwell, Jr., article, United States Naval Institute Proceedings, vol. 91, no. 5, May 1965, pp. 26-37, illus., printed, single copy 75 cents. United States Naval Institute, Annapolis, Md. 21402.

Studies with the Woodhead Sea-Bed Drifter in the Southern North Sea, by Peter Woodhead, Laboratory Leaflet (New Series) No. 6, 8 pp., illus., processed, Feb. 1965. Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, Suffolk, England.

Summary of the Work of the Second Indian Ocean Expedition of the Azov and Black Sea Research Institute of Marine Fisheries and Oceanography, by B. S. Solov'ev, JPRS 23394, 6 pp., illus., processed, 1964. (Translated from the Russian, Okeanologiia, vol. 3, no. 5, 1963.) Joint Publications Research Service, U. S. Department of Commerce, Bldg. Tempo E, E. Adams Dr., 4th & 6th Sts. SW., Washington, D. C. 20443.

"U. S. oceanographers visit the Soviet Union," by T. K. Treadwell, Jr., article, Oceanus, vol. 11, no. 3, April 1965, pp. 14-17, illus., printed. The Woods Hole Oceanographic Institution, Woods Hole, Mass.

World Beneath the Waves, by Walter Buehr, 112 pp., illus., printed, 1964, $3.25. W. W. Norton & Co., 101 Fifth Ave., New York, N. Y. 10003. Discusses different aspects of the ocean and oceanography. For grades 4 to 7.

O.E.C.D.:

Subsidies and Other Financial Support to the Fishing Industries of OECD Member Countries (Adopted by the Committee for Fisheries and Approved by the Council at Its Meeting on the 21st July 1964), 254 pp., printed, Jan. 1965. O.E.C.D. Publications Office, 2, rue André-Pascal, Paris 16e, France. This report is the result of a decision of the Fisheries Committee of the Organization for Economic Cooperation and Development to devote most of its 1962/63 program to studying: "The policies of Member countries regarding subsidies and other financial support in order to determine whether they are compatible with rational production and possibilities of sales, and/or whether they are a hindrance to the free development of competition and to desirable cooperation between the various Member countries." Member countries of O.E.C.D., established on Sept. 30, 1961, are Austria, Belgium, Canada, Denmark, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The book is divided into 3 parts. First, the general part discusses overall aspects of support projects--their objectives, financial methods, costs, and results for fishing fleets, fishery production, and international trade. It also summarizes findings on the feasibility of the abolition of financial supports: "They tend to create, or to help to perpetrate, abnormal conditions for the industry and, after a time, there may be no other alternative but to maintain these artificial conditions. As time goes by, it becomes increasingly difficult to revert to free competition. The very existence of subsidies often calls for yet further subsidies both at national and international level." The second part presents recommendations for each country by the O.E.C.D. Council. The third part contains the country chapters--each consisting of a survey of the various support schemes such as aid to vessel construction, price supports for fishery products, loans from government funds for purchase of gear, and other projects; and a general evaluation of those projects in that country. The annexes include a summary list of financial support schemes for fishing industries in O.E.C.D. countries; and statistical tables showing landings in those countries, 1956-61. This is a basic reference book on government assistance to fisheries in Europe and North America, and will be invaluable

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to administrators and of great interest to fishing industry people in those regions.

OREGON:

A Study of the Feasibility of Developing Small Boat Harbors in Six Oregon Counties, 106 pp., illus., processed, Feb. 1965, 50 cents. Area Redevelopment Administration, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) The purpose of the study was to determine the feasibility of developing small boat harbors and related marine facilities suitable for commercial fishing and recreational boating in 6 ARA-designated counties in the State of Oregon.

OYSTERS:

"Ancient oyster shells on the Atlantic Continental Shelf," by Arthur S. Merrill, K. O. Emery, and Meyer Rubin, article, Science, vol. 147, no. 3656, Jan. 22, 1965, pp. 398-400, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

Glucose Nutrition and Longevity in Oysters, by Larry Gillespie, R. M. Ingle, and Walter K. Havens, 10 pp., illus., printed, Dec. 1964. (Reprinted from Quarterly Journal of the Florida Academy of Sciences, vol. 27, no. 4, Dec. 1964, pp. 279-288.) Florida Academy of Sciences, University of Florida, Gainesville, Fla.

PACIFIC OCEAN:

A Conference on Joint Investigations of the Flora and Fauna of the Western Pacific, by Ia. I. Starobogatov, JPRS 23396, 4 pp., processed, 1964. (Reprinted from Okeanologiia, vol. 3, no. 5, 1963.) Joint Publications Research Service, U. S. Department of Commerce, Bldg. Tempo E., E. Adams Dr., 4th & 6th Sts. SW., Washington, D. C. 20443.

Proceedings of the Tenth Pacific Science Congress, Honolulu, Hawaii, 1961, edited by Leonard D. Tuthill, 474 pp., illus., printed, 1963. Bishop Museum Press, Honolulu, Hawaii. Report of the 10th Pacific Science Association Congress, held at the University of Hawaii, Aug. 21-Sept. 6, 1961. Included in the section of biological sciences are listings of papers under the divisions of limnology and fresh-water fisheries and of marine biology and fisheries. Among reports of standing committees are those on conservation, fresh-water sciences (including limnology, fisheries, and biology subcommittees), and marine sciences (includes subcommittee on nomenclature of the seabottom). Contains several papers on biology and oceanography of the Pacific area.

PARASITES:

Parasitic Copepods from Marine Polychaetes of Eastern North America, by Jorgen Lutzen, Travaux sur les Pêcheries du Québec No. 7, 14 pp., printed in English with French abstract, 1964. Division des Pêcheries, Ministère de l'Industrie et du Commerce, Quebec, Canada.

PERU:

Reports, processed in Spanish, of the Library, Instituto de Investigación de los Recursos Marinos, P. O. Box 3734, Lima, Peru. Limited distribution.:

Abundancia de los Huevos de Anchoveta (ENGRAULIS RINGENS) con Relacion a la Temperatura de Mar en la Región de Chimbote (Abundance of Anchovy Eggs with Relation to the Temperature of the Sea in the Region of Chimbote), by Blanca Rojas de Mendiola, Informe No. 25, 39 pp., illus., 1964.

Análisis Técnico de la Industria de Harina de Pescado en el Perú (A Technical Analysis of the Peruvian Fish Meal Industry), by E. Arnesen and J. Sanchez, Informe No. 13, 32 pp., illus., 1963.

Aprovechamiento de la Materia Prima en la Elaboración de Harina de Pescado Tipo Integral, Estudio Tecnico--Economico de Dos Metodos (Utilization of the Raw Material in the Production of Coarse Fish Meal, Technical Study--Economics of Two Methods), by T. Sparre and E. Arnesen, Informe No. 17, 20 pp., illus., 1963.

Costos y Beneficios en la Industria de la Pesca de Anchoveta 1962 (Costs and Profits of the Anchovy Industry, 1962), by I. Tilic, Informe No. 21, 65 pp., illus., 1963.

El Desarrollo de un Puerto Pesquero Modelo en el Departamento de Lambayeque--Conferencia Dada el Dia 15 de Enero de 1964 en el Club Lambayeque, Lima (The Development of a Model Fishing Port in the Department of Lambayeque--Conference Held on January 15, 1964, in the Club Lambayeque, Lima), by T. Sparre, Informe No. 23, 16 pp., illus., 1964.

La Industria Pesquera de la Anchoveta--Informe Presentado al Gobierno del Perú en Setiembre 1962 (The Anchovy Fishing Industry--Report Presented to the Government of Peru in September 1962), Informe No. 11, 23 pp., illus., 1963.

Marcación de Cachalotes Frente al Peru (Marking of Sperm Whales Along the Coast of Peru), by Jorge Mejia, Informe No. 26, 20 pp., illus., 1964.

El Mercadeo del Pescado en Lima: Preferencias de los Consumidores (The Marketing of Fish in Lima: Consumer Preferences), by W. F. Doucet and J. E. Garcia C., Informe No. 19, 71 pp., illus., 1963.

Métodos Analiticos para el Control de Producción de Harina y Aceite de Pescado (Analytical Methods for the Control of Fish Meal and Oil Production), by T. Sparre, J. Sanchez, and R. Lam, Informe No. 20, 29 pp., 1963.

La Pesca de la Anchoveta: Estadística de Pesca y Esfuerzo durante los Meses de Enero-Junio de 1963 (The Anchovy Fishery: Statistics of the Fishery and Fishing Effort, January-June 1963), by Isaac Vasquez Aguirre and I. Tzukayama, 39 pp., illus., 1964.

PHILIPPINES:

Fisheries Statistics of the Philippines, 1963, 109 pp., printed, 1964. Fisheries Economics and Statistics Section, Fisheries Research Division, Philippine Fisheries Commission, Department of Agriculture and Natural Resources, Quezon City, Philippines.

"Good catch in Philippines," by William P. Hunt, article, International Commerce, vol. 71, no. 16, April 19, 1965, pp. 7-8, illus., printed, single copy 35 cents.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Reviews the current situation in the Philippine fishing industry; origin and operation of various types of gear used; the need for refrigeration facilities; and possibilities for sale of United States vessels, gear, and machinery. The Philippine Republic has vast fishery resources but the domestic industry is still underdeveloped; production of fishery products is far below national requirements, and the country is still importing about $12 million worth of canned fish each year. However, there were plans for two canneries under construction to start production by June 1965. The small boat industry is developing to the extent that new boatyards are being built and some of the older plants are being enlarged. One corporation from Negros is interested in purchasing three combination vessels for purse seining and trawling. Philippine business firms have indicated many other needs: pumps for unloading fish; machines to manufacture nets; facilities to can tuna, sardines, and other products; and dehydrators and mill grinders to produce fish meal.

PHYSIOLOGY:
"Application of gas-liquid chromatography to the fat metabolism of fish," by Raul O. Peluffo, article, Chemical Abstracts, vol. 59, Nov. 25, 1963, Abstract No. 13163b, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

POLLUTION:
Report on Investigation of Fish Kills in Lower Mississippi River, Atchafalaya River, and Gulf of Mexico, 26 pp., processed, 1964. Division of Water Supply and Pollution Control, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D. C. 20201.

POND FISHERIES:
Fish Harvest by Wire Nets in a Stream Impoundment, by Carl Baker, Publication W-323, 14 pp., illus., printed, 1963. Division of Wildlife, Ohio Department of Natural Resources, Columbus, Ohio.

Problems in Pond Fishery, Collected Articles, 203 pp., printed in Russian, 1963. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, Moscow B-140, U.S.S.R.

PORPOISES:
"Trained porpoise released in the open sea," by Kenneth S. Norris, article, Science, vol. 147, no. 3661, Feb. 26, 1965, pp. 1048-1050, printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

PROTEIN:
"Protein typing of some authentic fish species by disc electrophoresis," by Vivian M. Mancuso, article, Journal of the Association of Official Agricultural Chemists, vol. 47, Oct. 1964, pp. 841-844, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington, D. C. 20004.

QUALITY:
"Measurement of hypoxanthine in fish as a method of assessing freshness," by John Spinelli, M. W. Eklund, and David Miyauchi, article, Journal of Food Science, vol. 29, no. 6, 1964, pp. 710-714, printed. Institute of Food Technologists, 510-522 N. Hickory St., Champaign, Ill.

RADIATION PRESERVATION:
"Radiation preservation of foods," by Ferdinand P. Mehrlich, article, Science, vol. 147, no. 3665, March 26, 1965, pp. 1600, 1602-1603, printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005. Discusses a comprehensive review of radiation preservation of foods research activities throughout the world given at an international conference held Sept. 27-30, 1964, in Boston, Mass. Among other topics covered were the areas of study pursued by the U. S. Atomic Energy Commission and the Bureau of Commercial Fisheries in the field of radiation microbiology of marine products: (1) shifting ecology of the irradiated flora due to variation in irradiation resistance and the unique spoilage patterns resulting; (2) whether significant numbers of microorganisms which survive are mutants, and what their disease-producing role, if any, is; (3) extent of increase in radioresistance; and (4) cooperating radiolethal effects of food additives (such as nitrates, sodium chloride, antibiotics), concomitant heat, and other agents.

REFRIGERATION:
"Marine refrigerating equipment of Japanese fishing vessels," by M. Seigoro Chigusa and others, article, Bulletin de L'Institut International Du Froid, vol. 45, no. 1, 1965, pp. 25-30, printed. Institut International Du Froid, 177, Blvd., Malesherbes, Paris, France.

ROE:
Processing Cod Roes, by A. McK. Bannerman, Torry Advisory Note No. 18, 8 pp., printed, Aug. 1964. Torry Research Station, Department of Scientific and Industrial Research, 135 Abbey Rd., Aberdeen, Scotland.

SALMON:
Statistics on Salmon Sport Fishing in the Tidal Waters of British Columbia, 1964, 26 pp., processed, 1964. Department of Fisheries of Canada, 1155 Robson St., Vancouver 5, B. C., Canada.

Available from Japan Fisheries Resource Conservation Association, 6th Fl., Zenkoku Choson Kaikan Bldg., 1-17, Nagata-cho, Chiyoda-ku, Tokyo, Japan. Printed in Japanese.:

Pacific Salmon in the Northern Waters--Conditions of Stocks, Fisheries Research Series 6, No. 3, by Tomonari Matsushita, 44 pp., illus.

--Distribution and Migration, by Tomonari Matsushita, Fisheries Research Series 6, No. 2, 76 pp., illus.

Available from the Japanese Fisheries Agency, Ministry of Agriculture and Forestry, 2-1, Kasumigaseki, Chiyoda-ku, Tokyo, Japan, printed in Japanese.

Artificial Propagation and Planting of Salmon in Sakhalin, by Osamu Sano, Rakusai Separate No. 634, 6 pp., illus., Jan. 1964.

Observations on Salmon Escapement in the Soviet Far East, by Osamu Sano, Rakusai Separate No. 636, 3 pp., illus., Aug. 1964.

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SARDINES:

The Pilchard of South West Africa (SARDINOPS OCELLATA)--the Benguela Current off South West Africa, by G. H. Stander, Investigational Report No. 12, 120 pp., illus., printed, 1964. Marine Research Laboratory, Administration of South West Africa, Windhoek, South West Africa.

SCALLOPS:

Notes on Escallops and Details of the Baird Sledge Dredge and Its Handling, Laboratory Leaflet (New Series) No. 5, 10 pp., illus., processed, Feb. 1965. Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Burnham-on-Crouch, Essex, England.

Scallop Survey New Brunswick, 1964, 7 pp., printed, 1964. Department of Fisheries, Ottawa, Canada.

"Seasonal variations in the sterol, fat and unsaponifiable components of scallop muscle," by D. R. Idler, T. Tamura, and T. Wainai, article, Journal of the Fisheries Research Board of Canada, vol. 21, Sept. 1964, pp. 1035-1042, printed, single copy C$2. Queen's Printer and Controller of Stationery, Ottawa, Canada.

SEA LION:

"Underwater visual discrimination by the California sea lion," by Ronald J. Schusterman, Winthrop N. Kellogg, and Charles E. Rice, article, Science, vol. 147, no. 3665, March 26, 1965, pp. 1594-1596, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

SEALS:

Collection of Scientific Papers 1962. The Greenland Seal and Hooded Seal, 138 pp., printed in Russian, 1963. Severnoe Otdelenie, PINRO, Knigoizdat, Archangel, U.S.S.R.

Seals of the World, by Judith E. King, 170 pp., illus., printed, 1964, 11s. plus postage (about US$1.70). Trustees of the British Museum (Natural History), Cromwell Rd., London S.W.7, England. The biology of seals is covered quite extensively in this book. The author in her introduction points out that "seal" is a term that is used very loosely, and this group of animals can easily be subdivided and the members called, more precisely, sea lions, fur seals, and true seals. The first part of the book deals with the details of this classification and lists the common and scientific names of all 32 species. Then an account is given of each seal, its distribution and general life history, food, habits, and commercial exploitation. Described are the sea lions of the North and South, fur seals (including the Pribilof and southern fur seals), walrus, true seals of the North, Antarctic seals, and monk, elephant, and hooded seals. The chapters that follow deal with distribution and currents; external shape and locomotion; skin, fur, molt, temperature; skull and skeleton; dentition and age determination; alimentary canal, liver, kidney; respiratory system; vascular system; reproductive organs; brain and nervous system; senses; diving; and fossils. Appendices include a list of internal and external parasites, and the origins of the scientific names. Also included is a list of references for those interested in further reading. A frontpiece shows some early illustrations of seals. Anyone interested in learning more about seals will find a wealth of information in this book.

--J. Pileggi

SEYCHELLES ISLANDS:

The Fishes of Seychelles, by J. L. B. Smith and Margaret Mary Smith, 215 pp., illus., printed, 1963. Department of Ichthyology, Rhodes University, Grahamstown, Republic of South Africa.

SHARKS:

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Fisheries Development Corporation of South Africa Limited (Covering Period 1st October, 1963, to 30th September, 1964), 16 pp., printed in Afrikaans and English, March 17, 1965. Fisheries Development Corporation of South Africa Ltd., Seafare House, 68 Orange St., Cape Town, Republic of South Africa. Presents brief summaries of the state of the inshore fisheries for anchovy and pilchards; production of fish meal and oil, canned fish, frozen pilchard fillets, and cooked and live spiny lobsters; and activities of the Corporation in shrimp, tuna, and whale investigations, construction and maintenance of fishing harbors, and related areas of interest. Also included is a review of the Corporation's financial condition.

SPINY LOBSTER:

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"Fiberglass reinforced plastic in building small fishing boats," by Erik Estlander, pp. 1-7, illus.

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MERIT BADGE IN OCEANOGRAPHY AWARDED TO BOY SCOUTS

A new honor--the Merit Badge in Oceanography--was recently awarded for the first time to more than 40 Boy Scouts and Explorers. At ceremonies aboard the oceanographic research vessel USNS Gilliss of the Military Sea Transport Service (MSTS) at Washington, D. C., the Scouts and Explorers were presented their badges in the new science by Rear Admiral Denys W. Knoll, Oceanographer of the United States Navy.

Boy Scout being awarded Merit Badge in Oceanography aboard research vessel USNS Gilliss.

The new Merit Badge in Oceanography was established in 1963 with the cooperation of the Chief of Naval Operations, the Oceanographer of the Navy, scientists from the U. S. Coast and Geodetic Survey, and other private institutions and universities.

It was most fitting that the Boy Scouts and Explorers were awarded the badges aboard the USNS Gilliss while the vessel was visiting the Nation's Capital, following oceanographic surveys in the Caribbean. She was named for Captain James M. Gilliss, USN, whose scientific pioneering as Superintendent of the Naval Observatory in the Civil War Years from 1861 to 1865 led to a greater knowledge of the sea. (Sealift, MSTS, Washington, D. C., January 1965.)

GUIDE TO TROPICAL ATLANTIC SEA BIRDS

A contract with the Smithsonian Oceanographic Sorting Center to prepare and publish an illustrated guide to the birds of the tropical Atlantic has been negotiated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Washington, D. C. The publication will include descriptions of each of the common species of sea birds of the tropical Atlantic along with both black and white illustrations and color pictures to assist in identification of those birds by scientists and crew members aboard the Laboratory's research vessels. Specimens of sea birds were collected by laboratory staff members aboard the Bureau's research vessel Geronimo. An ornithologist of the Smithsonian Institution made one collection trip aboard the Bureau's research vessel.

Interest of fishery scientists in sea birds is generated by the fact that, in tropical waters, a "working" flock of birds usually means a tuna school. The tuna feed on shoals of small fish which they crowd to the surface. When tuna are at the surface the birds work low over the water in a frenzy of diving, swooping, and circling. Such bird flocks can be seen at distances of from 3 to 5 miles, whereas the best sonar currently available can pick up tuna schools at a distance of less than 1 mile.

SO WHAT'S NEW WITH BURGERS AND BARBECUE?--SALMONBURGERS

Burgers and barbecue are about as common at a cookout as hot dogs at the ball park. But for a new taste, new look, new everything for the cookouts this summer, try fish and shellfish.

It all started when a group of inquisitive Home Economists of the U. S. Department of the Interior's Bureau of Commercial Fisheries decided to completely remake the burger. From this venture came a salmonburger that turns the commonplace into the classic.

Salmonburgers combine can-venience with convenience for a cookout classic that's easy, economical, and highly nutritious. Burgers are molded from a mixture of canned salmon, chopped onion, bread crumbs, egg, sweet pickle, and mayonnaise, then fried to a sizzling golden brown in a skillet over the coals. Here is the recipe.

Salmonburgers on the griddle. In the pot is Tuna Barbecue, hearty chunks of canned tuna with a tangy easy-to-fix barbecue sauce.

SALMONBURGERS

1 can (1 pound) salmon
½ cup chopped onion
¼ cup melted fat or oil
⅓ cup salmon liquid
⅓ cup dry bread crumbs
2 eggs, beaten
¼ cup chopped parsley
1 teaspoon powdered mustard
½ teaspoon salt
½ cup dry bread crumbs
⅓ cup mayonnaise or salad dressing
1 tablespoon chopped sweet pickle
6 buttered hamburger rolls

Drain salmon, reserving liquid. Flake salmon. Cook onion in fat until tender. Add salmon liquid, crumbs, egg, parsley, mustard, salt, and salmon; mix well. Shape into 6 burgers. Roll in crumbs. Fry in hot fat in a heavy fry pan about 4 inches from hot coals for 3 minutes. Turn carefully and fry for 3 to 4 minutes longer or until brown. Drain on absorbent paper. Combine mayonnaise and pickle. Place burgers on bottom half of each roll. Top with approximately 1 tablespoon mayonnaise mixture and top half of roll. Serves 6.

The recipe is from a 24-page, full-color, outdoor cookery booklet (Fish and Shellfish - OVER THE COALS) recently released by the Interior Department's Bureau of Commercial Fisheries. For 40 cents you can buy a copy from the Superintendent of Documents, Washington, D. C. 20240.

HIGHLIGHTS IN THIS ISSUE (JULY 1965)

Landing of large cod at Boston Fish Pier in 1960.

Features

THE U. S. COD FISHERY IN THE NORTHWEST ATLANTIC--A historic fishery (page 1)

SOME OBSERVATIONS ON PENAEID SHRIMP OFF EASTERN VENEZUELA--A potential fishery (page 12)

Trends in the United States Fisheries

TUNA--Catch forecasts for the 1965 Hawaiian summer skipjack fishery (page 19) and the California bluefin and albacore fishery (page 49)

SWORDFISH AND TUNA--Exploratory fishing with longlines in the North Atlantic (page 32) and South Atlantic (page 47)

SHRIMP--Electrical trawling tests recorded on movie film (page 24)

GREAT LAKES--Exploratory fishing points the way toward expanded chub and alewife fishery (page 22)

FOREIGN TRADE--Imports accounted for half of 1964 U. S. supply of fishery products (page 50)

Also in this issue: Market reports, including inventory situation for canned salmon, canned Maine sardines, and industrial products--Reports on new vessels--Summaries of State and Federal actions affecting fisheries--and news of fisheries research on all coasts.

Reports on Foreign Fisheries

FOREIGN FISHING OFF UNITED STATES COASTS--Soviet and Japanese fishing in Bering Sea and Gulf of Alaska (page 15); Soviet fishing in North Atlantic (page 30)

CUBA--Tuna fisheries expansion planned (page 64)

JAPAN--A comprehensive survey of Japan's major fisheries--tuna, salmon, crab, shrimp, groundfish--with export targets for fiscal year 1965 (pages 68-82)

ICELAND--Trawling fleet continues to decline (page 66)

AFRICA--Fish protein concentrate produced in Morocco (page 87) and South Africa Republic (page 91)

Also reports on 24 other countries including trends in landings, processing, foreign trade, new vessels, and new laws affecting fisheries